FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.

The Call for Airmen.

In the present crisis of the nation's history the call to airmen to rally to the defence of the country which was issued on Saturday last by the Marquis of Tullibardine, and which we republish on another page, needs no comment from us. We simply record the fact that the answer was prompt, decisive and exactly what we should have expected of the fine young manhood which has devoted itself to the development of aviation. May God speed them on their errand!

The Future of Naval Warfare.

Some few weeks ago we commented upon the theory advanced by Sir Percy Scott, that as in future naval engagements submarines and aircraft will probably act together, the submarine had become, potentially, a much more effective weapon of offence or defence, and, therefore, the day of the big battleship had passed. Whether this be true or not, it is, at the moment, difficult to judge, although some practical object lessons may be expected, even before this journal is in the hands of our readers. Experts on naval matters hold diametrically opposed opinions in regard thereto, and when such is the case, it cannot be expected that the layman can come to any definite conclusion. Two points, however, emerge from the discussion in *The Times*, with which we feel competent to deal, namely—(1) that both submarines and aircraft require a surface vessel to which they can return for the replenishment of fuel and ammunition, and for repairs, and (2) that the expenditure on armaments is likely to be greatly increased. Sir Percy Scott argues that the latter eventuality is extremely probable, but remarks that a parent ship is by no means essential, since submarines and aircraft can operate from a harbour or other permanent base.

Taking the two points in order—the extent to which these two forms of fighting machine are dependent upon a base will be inversely proportional to their sea- or air-worthiness, and their carrying capacity, and these will tend to be greater the larger the vessel is. It is, however, generally known that modern submarines have made most extended voyages, some of which have continued for as long as 24 hours, in seas far rougher than would have been deemed possible a few years back. And there are many high authorities on submarine work who believe that in the not far distant future we shall possess submersible vessels of a size and with an armament comparable with that of cruisers; in which event they may be capable of relying upon themselves in any emergency, and be able to keep the sea in practically any weather. Similar remarks apply to seaplanes, although perhaps in a modified degree. Long-distance continuous flights are now common, and the duration and time of flying will continue to lengthen in the future: the large seaplanes now seen will ultimately give place to still larger and better machines, carrying a proportionately greater useful load, and being easier to control, more reliable, more stable and more comfortable machines in fact, that can weather any gale, and "ride" quite moderate seas. Submarines (heretofore regarded purely as weapons of defence) and seaplanes have now reached, or will in the near future attain to, such a stage of development that their sphere of action will no longer be restricted to the small area in the immediate vicinity of a harbour or floating base; the latest submarines will doubtless operate within a radius of at least 100 miles from a port, and seaplanes over a much more extended area, limited only by their fuel capacity, and the reliance which can be placed upon their engines.

As regards the effect of this new development upon future expenditure on armaments, much must depend upon the numbers and sizes of the respective types of

craft. A writer to *The Times* has recently suggested that 1,500 of each type would be necessary in order that we may possess 1,000 effective machines, and to reach this figure within three years—the maximum time he considers permissible, assuming that the death-knell of the big battleship has been sounded—he arrives at the result that we should spend £57,333,333 on submarines and £600,000 on seaplanes per year for the next three years. In such a calculation, however, it is absolutely necessary not to overlook one very important factor. If this expenditure is to be made use of to the fullest or even to a moderate extent, it is essential that there must be sufficient trained men to man them, and it cannot be denied that it is a matter of impossibility to turn out highly-trained specialists in under water and aerial warfare, neither is it feasible to fully equip and establish the organisation necessary to deal effectively with the matériel, if available, in the time given. To indulge in enormous expenditure of the character indicated, on submarines—which have yet to *prove* their effectiveness in attack—and perhaps even on aeroplanes, at the present moment or until such time as we can train the requisite number of pilots and observers—although aeroplanes will not be employed exclusively in war, in co-operation with submarines—is more likely to result in chaos than in the evolution of a strong Navy. We now have a small, but highly efficient, Naval Air Service, which must be developed enormously in the near future, and its growth must be governed by the ability and magnitude of the personnel as well as by the necessity of possessing such machines as will cope with any emergency that may arise. Here is the crux of the whole problem—the training of the men—and this is the branch which must soon undergo extensive expansion.

We have refrained from commenting upon the inadequacy of the capital sum of £600,000 to cover the cost of 1,500 seaplanes per year, in view of the probable growth in size, equipment and effectiveness of the future machines, because of the greater importance of an efficient personnel, and because, from the opposition it arouses in certain quarters, any suggestion of incurring enormous expense is likely to do incalculable harm to the progress of an arm which it is our duty to foster.

Cross-Country Flying Prohibited.

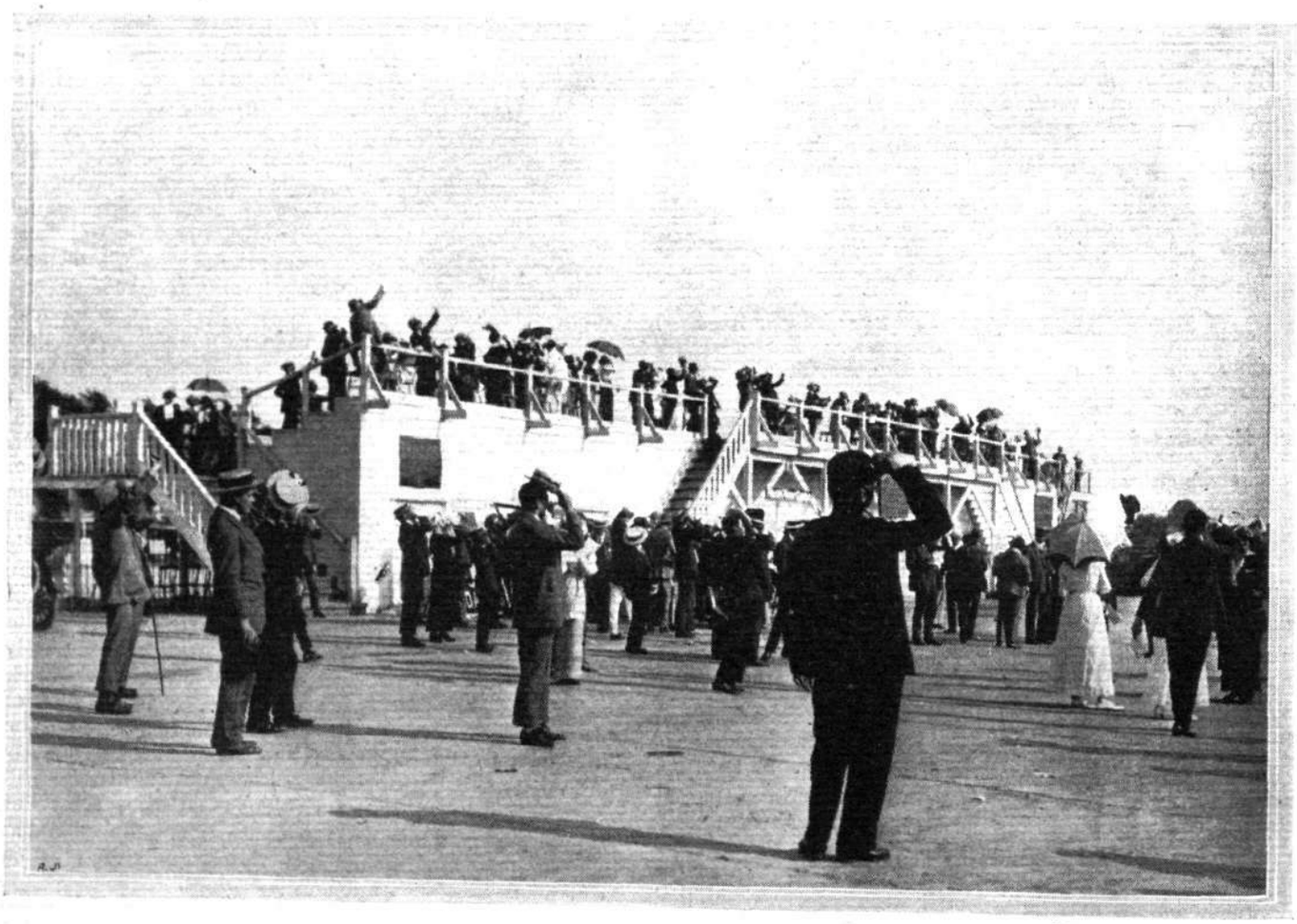
THE following is the full text of the notice issued by the Home Office prohibiting cross-country flying except within three miles of a recognised aerodrome :—

"In pursuance of the powers conferred on me by the Aerial Navigation Acts, 1911 and 1913, I hereby make, for the purposes of the safety and defence of the Realm, the following Order :

"I prohibit the navigation of aircraft of every class and description over the whole area of the United Kingdom, and over the whole of the coastline thereof and territorial waters adjacent thereto.

"This Order shall not apply to naval or military aircraft or to aircraft flying under naval or military orders, nor shall it apply to any aircraft flying within three miles of a recognised aerodrome.

(Signed) "R. MCKENNA,
"One of His Majesty's Principal Secretaries of State."



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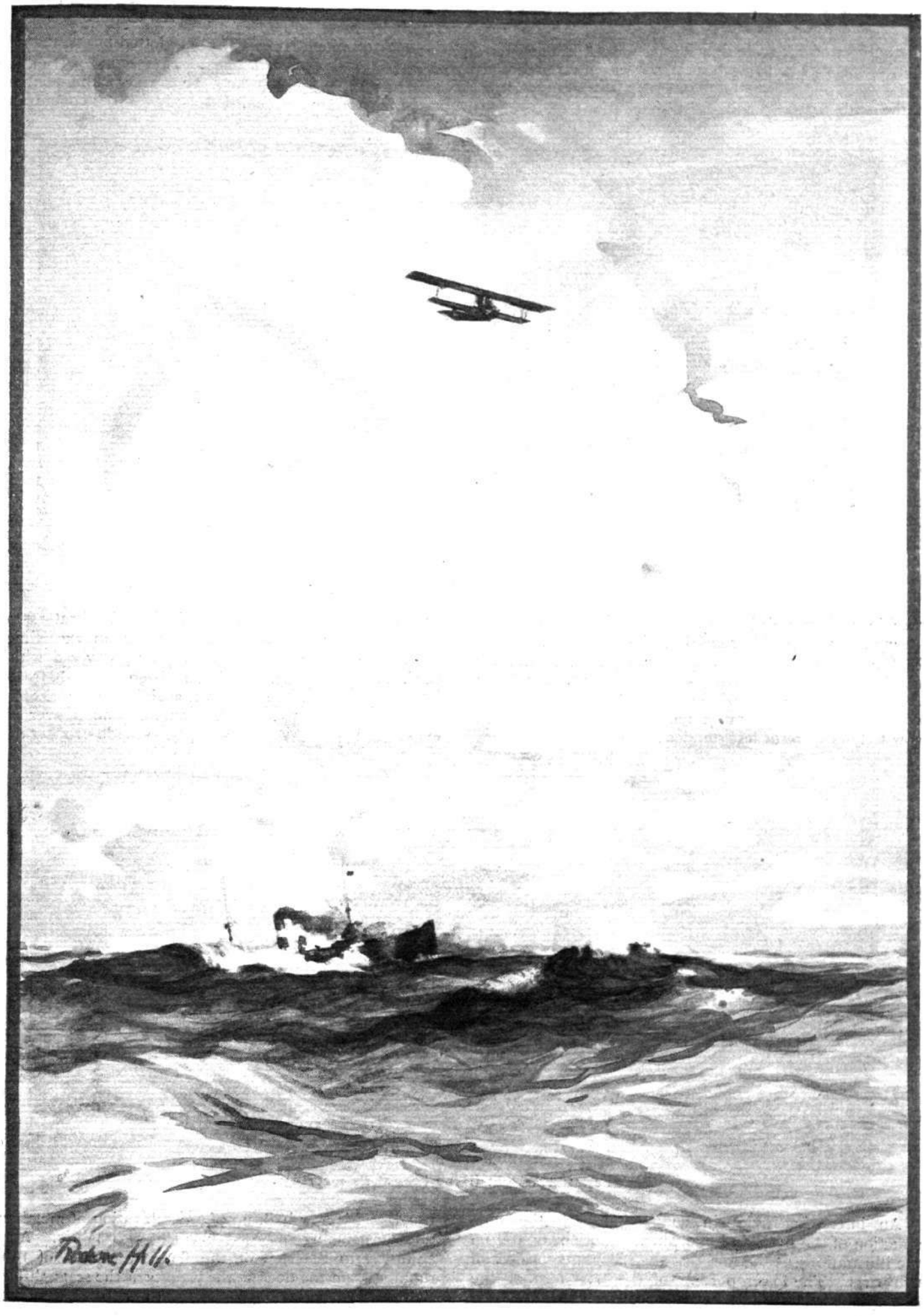
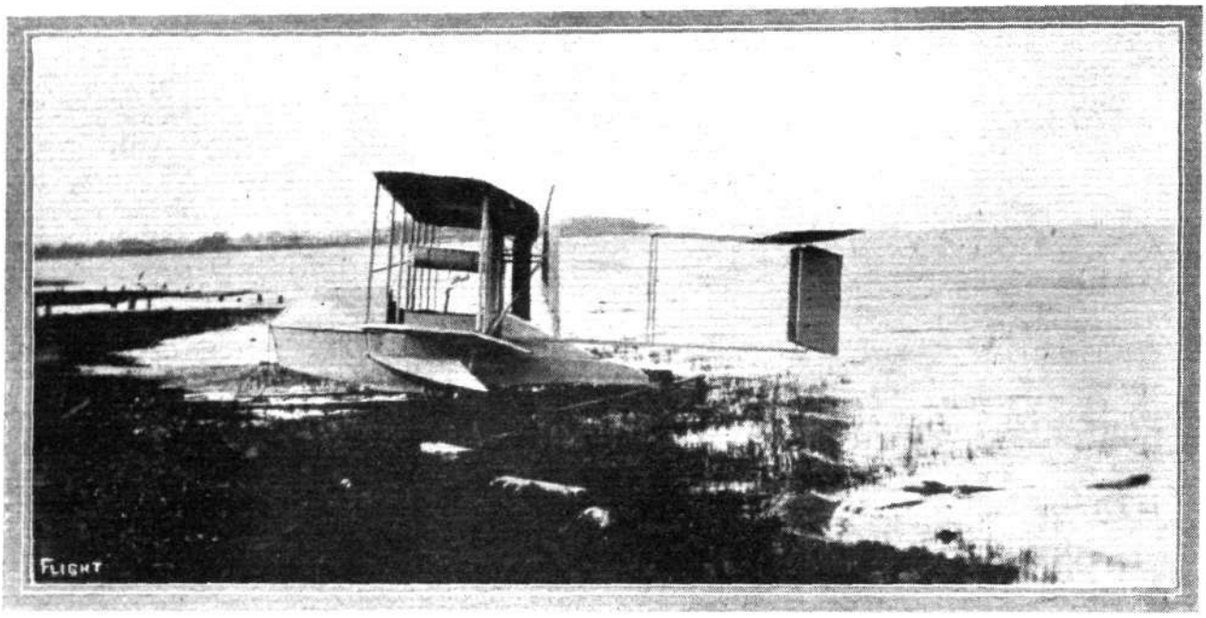
THE FINISH OF THE DAY AT BROOKLANDS RACING MEETING.—The crowd following with keen interest Mr. Hawker's looping on a Sopwith machine.



THE ATLANTIC FLIGHT AS IT MAY BE.—From an original drawing by Roderic Hill.

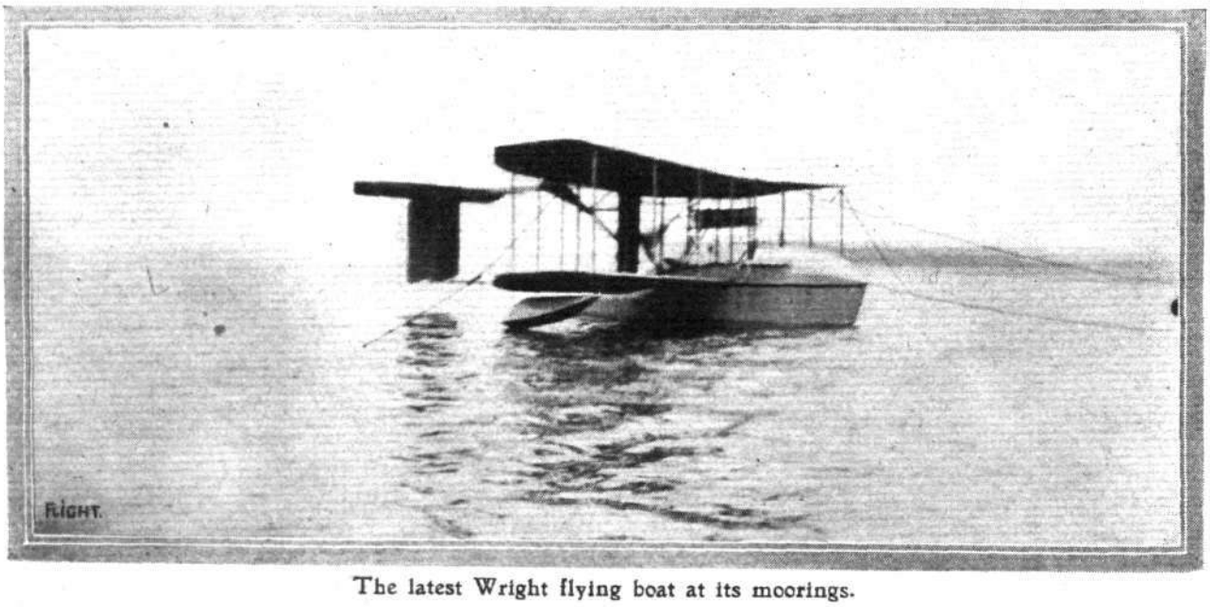
THE LATEST WRIGHT FLYING BOAT.

THE subject of our scale drawings this week is a development of the Wright flying boat which was illustrated and described in our issue of January 17th last. A comparison of the scale drawings and other illustrations of the two machines will reveal that two main alterations have been effected in this latest product of the Wright Company. In the earlier model the engine was placed behind the pilot's and passenger's seats, whilst in the new machine it is mounted in the nose of the boat. Another innovation is to be found in the arrangement of the tail planes, which now follows more or less standard lines.

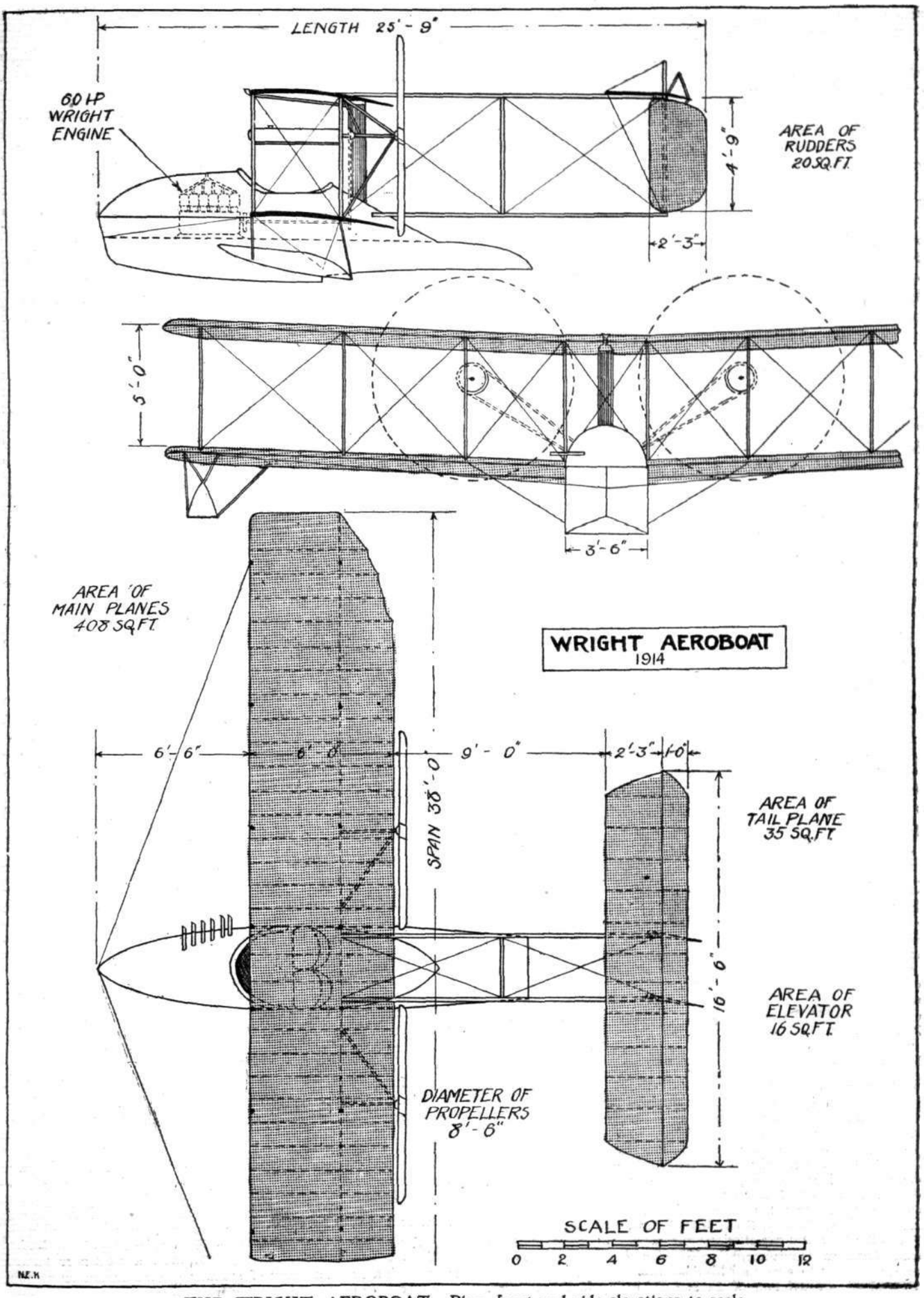


The Wright flying boat on the beach.

An interesting point in connection with the construction of the boat, and one which is not apparent from the illustrations, is the fact that this structure consists of two parts. The lower portion of the boat forming the hydroplane surfaces and step is virtually a sealed pontoon, the deck of which is shown by the dotted line in the side elevation of the scale drawings. The second part of the hull is formed by extending the sides of the pontoon upwards to form an enclosed body for the engine and occupants, protecting them very effectively from water spray Constructionally, the boat is built up of an exceedingly strong framework of ash and spruce, covered with a thick metal sheeting, which has been carefully treated both inside and out to protect it against the deteriorating action of sea water. The streamline hood over the engine and around the seats has been made stronger than usual, and is now built up of a combination of metal and double planking of wood covered with fabric. Air is admitted to the step of the float by means of tubes running from the deck in the vicinity of the seats, through the watertight pontoon, and out at the step. These tubes



The latest Wright flying boat at its moorings.



THE WRIGHT AEROBOAT.—Plan, front and side elevations to scale.

serve not only to ventilate the step but drain the cockpit, in which the seats are located, of any water shipped in bad weather, in a similar manner to that employed in self-bailing lifeboats. With this provision there is no danger of flooding the cockpit, as the water will immediately flow off either through the tubes or out to the rear along the water-tight deck.

The engine—a six-cylinder 60 h.p. Wright—is mounted on top of the watertight deck and in front of the seats. Transmission is by means of a central shaft passing under the seats and thence by chains to the two propellers, which are, as usual, situated behind the main planes. As customary in Wright practice, one of the driving chains is crossed in order to make the propellers revolve in opposite directions. As in the land machines, the propellers are geared down and rotate at approximately 580 r.p.m., but in the reverse directions customary in previous Wright models.

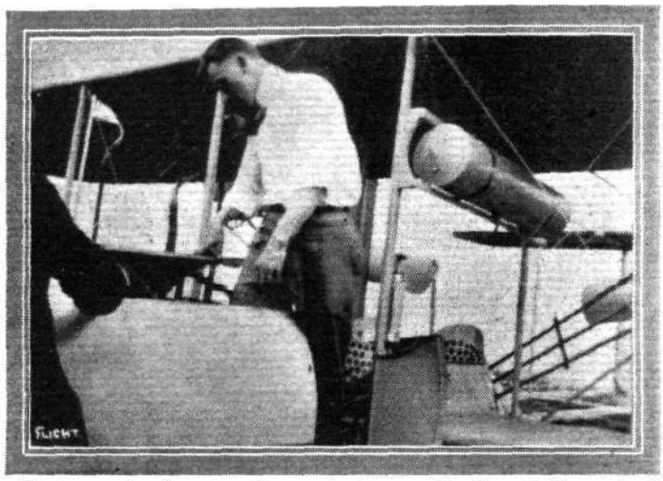
A refinement not usually found on aeroplanes has been introduced in the transmission system by incorporating shock absorbers in the coupling between the engine and the driving shaft.

The metal covering over the engine is made in the form of two large sliding hatches, which, when removed, give access to the engine, and when closed serve as a practically watertight covering. As we have already mentioned, this covering has been considerably strengthened in the new machine, so that it is possible for the boat to plunge head on into a large wave without any danger of having the water flood the "engine room" with detrimental effect to the running of the engine, whilst the large removable hatches allow minor adjustments being made with the engine running.

As will be seen from the accompanying scale drawings, the main planes are of the same plan form as previous models, but differ considerably from previous Wright practice in that they are set at a slight dihedral angle, and have a section of much greater thickness than has been previously employed. The ribs are now made of solid I-section, and the depth of the spars has been considerably increased, resulting in a much stronger wing construction. The very highest grade of steel wire is used throughout, and wire strainers and other joints, apt to become loosened, have been almost entirely eliminated, and all the important lift wires, as well as the control cables, are in duplicate.

Under the tips of the lower wing are mounted auxiliary floats, attached to the wing spars by strong steel braces. In the previous model, it will be remembered, paddles were fitted to the wing tips for the purpose of steering the machine on the water, but as these were found to be unnecessary they have not been used in the new machine, which answers the rudders well when taxying.

One of the features which have characterised Wright machines has disappeared, *i.e.*, the flexing tail plane. In its stead is fitted a fixed tail plane bolted to the upper



Photograph showing how admittance to the pilot's cockpit is gained through a small side door similar to those of a motor car.

tail booms, to the trailing edge of which is hinged the elevating plane. Below the tail planes, and pivoted around two steel tubes, forming at the same time the rear struts of the tail outrigger, are the twin rudders, which also differ in shape from those of earlier Wright machines.

Dual control is fitted, and provision has been made for mounting either standard Wright controls or the new Wright wheel control.

The weight of the machine empty is 1,300 lbs., and the speed variation ranges from 40 to 60 m.p.h.

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Keep Clear of Air Stations, &c.

THE following official notice has been posted in the neighbourhood of aircraft and wireless telegraph stations warning the public of the danger of straying too close to them at the present time:—

"All persons are hereby warned that all Army sentries at the waterplane station or on the foreshore have orders to challenge once, and if not instantly obeyed to fire. On the order to halt they must immediately do so. They will approach the air station at night at their peril.

"This order applies to the wireless telegraph station and all places where the Army sentry is stationed.—By order."

Aviation and the War.

As has been indicated in these pages, the first despatches which are to hand from the fighting line go to show that aircraft will play a leading part in the opening stages of the great war which is now upon us. When war between France and Germany seemed inevitable, the French aviators at once rallied to the support of the military authorities. Among the first to do so were Roland Garros, Edmond Audemars, Eugene Gilbert, Maurice Chevilliard, Marc Pourpe, docteur Espanet, Gaubert, Péquet, Bill, Molla, Bielovucic, Maurice Prévost, Baudry, Rose, René Vidart, who sent a combined letter to the War Minister offering their services with their machines. Lieut. Conneau "Beaumont" also offered his services to the Government, together with all his machines.

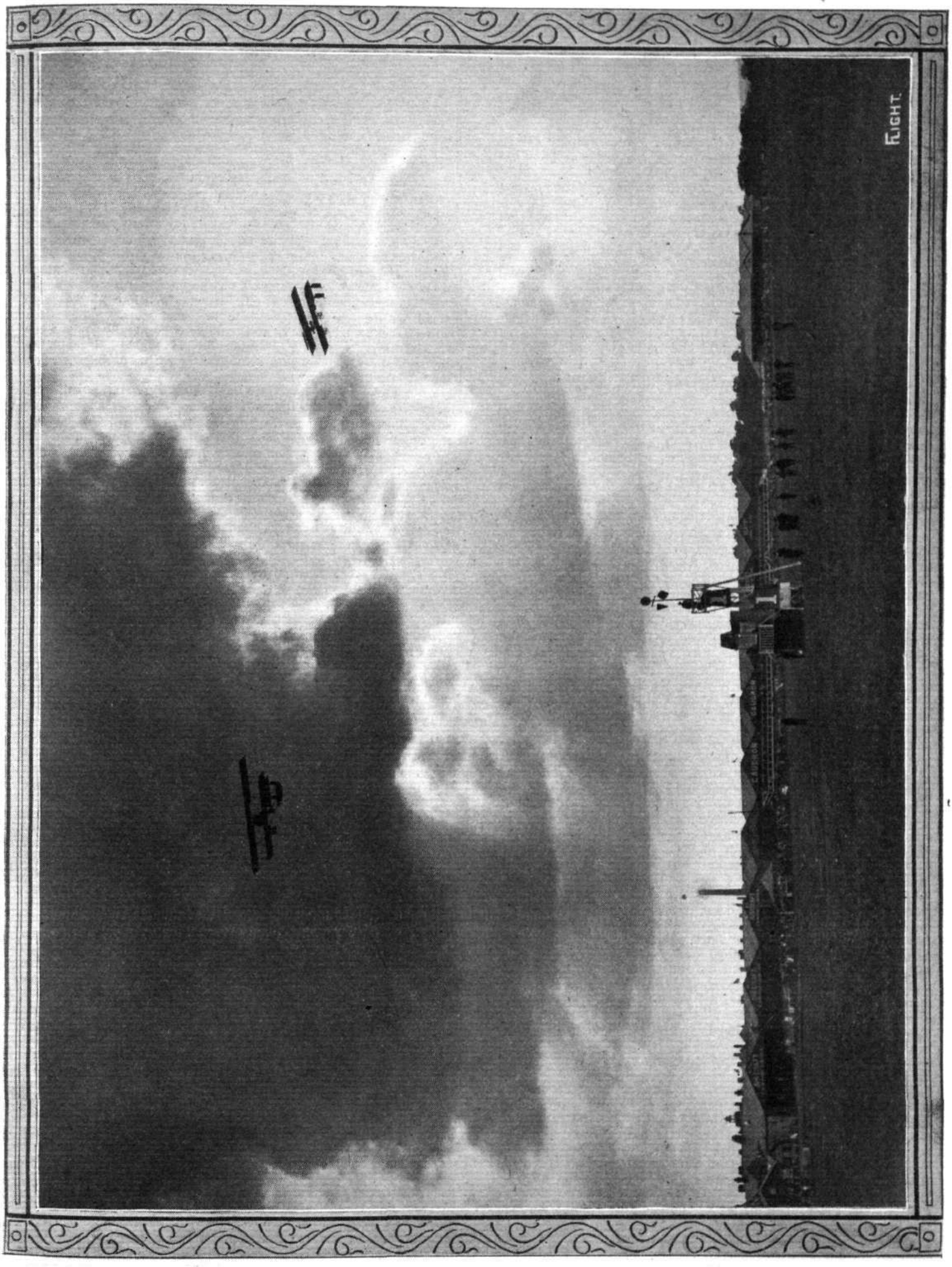
Several of the aviators of French nationality in this country, whose names are familiar to FLIGHT readers, had to return, notably M. Jullerot of the Bristol school, M. Teulade of the Blériot school at Brooklands, M. Verrier of the Aircraft Manufacturing Co. (Farmans) at Hendon, and M. Salmet. Baumann has returned to Switzerland, and Louis Noel called on Wednesday last, *en route* for France, to say goodbye to his friends on FLIGHT. May their records be the best by the end of the war.

A message received in Paris on Sunday stated that a Zeppelin, which flew across the frontier, was rammed by Garros. It is stated that this heroic exploit resulted in the total wreck of the airship and the killing of all the crew, while, of course, Garros lost his life.

From Berlin a message was received on Sunday to the effect that French aeroplanes had been seen between Dueren and Cologne, and it was also stated that a French aeroplane had been brought down by marksmen at Wesel. Other reports stated that a French aviator had thrown bombs into Nuremberg, and that a German pilot had done a similar thing at Luneville, while a German aviator is said to have been shot in mid-air by a French pilot at Longwy, the former being killed in the subsequent fall of his machine from a height of 300 ft.

Double Fatality in Italy.

A MESSAGE from Novare states that on the 28th ult. an Italian military machine piloted by Caviggia, with a passenger named Camiletti, fell from a height of 250 metres at the Cameri aerodrome, and that both pilot and passenger were killed.



FLYING AT HENDON.—Mr. Grahame-White on an M. Farman and Mr. Lillywhite on the twin-rudder G.-W. 'bus over No. 1 pylon.

FLYING AT HENDON.

A BOMB DROPPING competition was the principal event at Hendon on Thursday afternoon of last week. Owing, no doubt to the atmosphere of war, some very good shots were got in, as will be seen from the result of this contest given below. A target of about 100 feet in diameter was marked out opposite the enclosures, and each competitor flying at an altitude of not less than 300 feet, was allowed three tries. The competitor whose average of the three shots worked out the closest to the target was declared the winner. Four Hendon pilots took part in this event: Louis Noel and W. Birchenough, on the 70 h.p. Maurice Farman, and A. E. Barrs and F. G. Dunn on the 50 h.p. G.-W. bi-rudder 'bus. The latter pilot put up the best performance, his three shots being wonderful hits; his first was 15 yards from the centre of the "bull," his second 17 yards, and his third 2½ yards! The following is a table showing the results at a glance:—

Bomb-Dropping Competition.

		1st Shot.	2nd Shot.	3rd Shot.	Average.
1.	F. G. Dunn ...	15 yards	17 yards	2½ yards	11 yards
2.	A. E. Barrs ...	45 ,,	47 ,,	53 ,,	48 ,,
3.	Louis Noel ...	63 ,,	66 ,,	41 ,,	57 ,,
4.	W. Birchenough	70 ,,	90 ,,	65 ,,	75 ,,

In addition to the bomb-dropping competition, several exhibition and passenger flights were made. A. E. Barrs and F. G. Dunn were out on the bi-rudder 'bus, and W. Birchenough and Louis Noel were busy with passengers on the Maurice Farman. Pierre Verrier flew the 70 h.p. Aircraft-Maurice Farman, and J. L. Hall came out on his 50 h.p. Avro, prior to leaving for Shoreham. Exhibitions were given by E. Prosser on his 45 h.p. Caudron, whilst Mr. Merriam also flew the same machine. G. J. Lusteed left for Shoreham, *via* Brooklands, on the *Daily Mail* Avro.

The first day of the Ninth London Aviation Meeting on Saturday last was a somewhat short one owing to the high wind and a rain storm. Some very good flying was seen, nevertheless, the event of the afternoon being R. J. Lillywhite's magnificent display of airmanship when taking part in the 16-mile cross-country handicap, which was held in place of the 12-mile speed handicap for the "Sassoon" Cup, down on the programme—an event impossible to hold under the then existing weather conditions. Lillywhite was piloting the 50 h.p. G.-W. bi-rudder 'bus, and throughout the race—with rain falling all the time—the machine plunged and rocked in the wind in a manner that was at times alarming to behold. But this was not all, for when crossing the line at the end of his four laps he was struck by a terrific gust which almost upset the machine, which was not only very close to No. 1 pylon, but was only some few yards below Birchenough, on the Maurice Farman, who was just overhauling Lillywhite. Both machines plunged as the gust struck them, and it looked at first as if the Maurice Farman was going to "land" on the machine below it, but fortunately both pilots skilfully drew apart and made safe landings. There were six starters in this race, which was over four laps of the Bittacy Hill circuit, as follows:—R. J. Lillywhite on the 50 h.p. G.-W. bi-rudder 'bus (12 mins. 10 secs.); E. Prosser on his 45 h.p. Caudron (8 mins. 6 secs.); W. Birchenough on the 70 h.p. G.-W. Maurice Farman (7 mins. 5 secs.); Louis Noel (35 secs.); W. L. Brock (20 secs.); and R. H. Carr (scratch); all these on 80 h.p. Gnome-Morane-Saulniers. The "get off" of the last three was another exciting incident. In order to start facing the wind all the machines were lined up near to the far end of the aerodrome facing the enclosures, each machine having to round No. 1 pylon before starting off for Bittacy Hill. It will be seen that only a few seconds separated each of the three Morane-Saulniers, so that they got off and rounded the pylon, all banking sharply, one close behind the other—truly an imposing sight, the deafening roar of the three engines adding considerably to the effect. These three had it all their own way in the race, and finished first, second, and third in the same order in which they started, Noel gaining a few seconds on Brock, whilst Carr, who had to contend with the backwash from both, dropped a little behind. Lillywhite came in fourth, as previously described, and in recognition of his fine performance a special medal is being struck for him. By the time the race ended the rain came down worse than ever, and the proceedings had to be brought to a close. Prior to the race, however, several exhibition and passenger flights were made. The first up was Birchenough on the Maurice Farman, Lillywhite on the bi-rudder 'bus, and Brock with a passenger on the Morane-Saulnier following shortly after. Noel then made two flights on the Maurice Farman, and Prosser came out on his Caudron and put up a fine exhibition, banking, &c. Carr was the next to ascend with a passenger on the other 80 h.p. Morane-Saulnier, whilst A. E. Barrs ascended on he bi-rudder 'bus.

16-Mile Cross-Country Race. (Result.)

		Handicap.	Handicap Time.
		m. s.	m. s.
1.	Louis Noel (80 h.p. Morane-Saulnier mono.)	0 35	25 35
2.	W. L. Brock (80 h.p. Morane-Saulnier mono.)	0 20	25 54
3.	R. H. Carr (80 h.p. Morane-Saulnier mono.)	scratch	26 43
4.	R. J. Lillywhite (50 h.p. G.-W. biplane) ...	12 10	27 33⅗
5.	W. Birchenough (70 h.p. M. Farman biplane)	7 5	27 34
	E. Prosser (45 h.p. Caudron biplane) ...	8 6	—

Alternate rain showers and exhibition flights with a high wind all the time was the state of affairs on Sunday afternoon. W. L. Brock escaped from the wet and the worries of war below by ascending on the 80 h.p. Morane-Saulnier into bright sunshine 6,500 ft. up. W. Birchenough was out on the 70 h.p. Maurice Farman, and R. J. Lillywhite had an unpleasant experience which might have ended seriously. He was just getting off on the bi-rudder 'bus when one of the engine cylinders blew off, fortunately before he was high up and without carrying away the tail outriggers. The piston followed the cylinder head, and both were eventually found some distance away. R. H. Carr made several flights on the other Morane-Saulnier, experiencing some trouble when landing owing to the gusty wind.

The last day of the meeting, Bank Holiday, carried with it an atmosphere of excitement that will be remembered for some time to come. This was undoubtedly due to the war-cloud that has unhappily enveloped Europe and this country, because the flying itself, though excellent, was in no way out of the ordinary. In the first place, there was the Home Office Order prohibiting all flying except within a three-mile radius of a recognised aerodrome, and, secondly, there was a feeling around that the next meeting at Hendon might be very different from those usually held, viz., of a military nature. Perhaps there were some present who expected the arrival of a Zeppelin with a load of bombs, for the writer noticed that many looked heavenwards with anxious expressions, whilst some pigeon shooting on a rifle-range outside the aerodrome was the cause of several heart altitude flights. Yes, there was a strange air of restlessness about. Early in the morning, before the Home Office Order was known, W. Birchenough left with a mechanic on the Maurice Farman for Leighton Buzzard—a distance of about 30 miles—where he was to give exhibition flights. At about 1 p.m. Louis Noel made a test flight on the 80 h.p. Henry Farman, which had been rebuilt after its smash at Hull some little time back. A little later on R. J. Lillywhite came out on the 50 h.p. G.-W. bi-rudder 'bus, after which Noel made another flight on the Henry Farman, and W. L. Brock ascended on the 80 h.p. Morane-Saulnier. As usual Brock flew high, and was soon lost in the clouds, appearing again from time to time still climbing. After a long interval he was seen returning to earth *via* a spiral *vol plané*, his descent lasting nearly 20 mins. An examination of his barograph showed that he had reached an altitude of 10,500 feet. Brock said that it was very cold up, and exceptionally clear, enabling him to see a great distance—someone asked if he could see the Germans in the North Sea—although the lower clouds restricted his view somewhat. After this magnificent flight a bomb-dropping competition was held under similar conditions that obtained on Thursday. The first to try was Lillywhite on the bi-rudder 'bus, his three shots being 18½ yds., 9½ yds., and 9 yds. from the centre of the target, his average being 12 yds. F. G. Dunn then took over the 'bus, and obtained the same average as Lillywhite, his shots being 16 yds., 13 yds., and 8 yds. The next to try was Louis Noel, who flew the 80 h.p. Henry Farman with a passenger. Noel's shots went wider than the others, but he was flying higher and faster; his three shots were 60 yds., 44 yds., 42 yds., average 49 yds. A. E. Barrs was the last to try on the bi-rudder 'bus, and his second shot was the best of the afternoon, 7½ yds., his others being 24 yds. and 11 yds., average 14 yds. Lillywhite and Dunn having tied, each had one more shot each, and this time both hit 32 yds. from the centre! Instead of trying again they decided to split the prize (£10)—and the cup. The next event was a 9-mile cross-country handicap to Bittacy Hill and back three times for the "Desborough" Challenge Bowl, presented by Lord Desborough, which has to be won three times by the same competitor before becoming his absolute property; last year it was won by P. Verrier. There were three starters: R. J. Lillywhite on the bi-rudder 'bus (10 mins. 12 secs.), W. L. Brock (5 secs.), and Louis Noel (scratch), both on 80 h.p. Morane-Saulniers. They started from the same part of the aerodrome as on Saturday's race, the two Morane-Saulniers getting away as if one was pulling the other, so close together were they. Lillywhite proved an easy winner, crossing the line 1 min. 4 secs. before Brock,

who was 12 secs. ahead of Noel. After the race, Lillywhite gave an exhibition on the 'bus, and a little later some surprise was caused by the appearance of a monoplane high up. When over the aerodrome it proved to be the *Daily Mail* Blériot, and when it landed by the Grahame-White sheds, its pilot was found to be Henri Salmet. He informed us he had left Monmouth at 12.30 p.m., and had experienced a very trying time owing to the rain, being delayed *en route*. He was unaware of the Home Office Order, and had intended proceeding to France by air as soon as he had changed the wings of the Blériot. He was, however, unable to do this, and so decided to return to France by train and boat. He left the aerodrome later, after having received a cordial send off from several of the many friends he has made in this country. We had no sooner got over the surprise of this incident when a Maurice Farman was seen over the aerodrome, and by the way it descended with the propeller stationary and numerous swerves and dives, we saw it was Verrier. He had come from Coventry, having left there at 4.25 p.m., and encountered rain nearly all the way; his average height throughout the journey was 3,000 ft. He had obtained permission to fly from the War Office, and like Salmet was returning to France where his services were needed. He also got an enthusiastic send-off, with many wishes to see him back again soon at Hendon. In the meanwhile the last event on the programme, a 12-mile speed handicap for the Mappin and Webb "London" Cup, was flown in a single heat of 8 laps with three starters. The latter were Lillywhite on the G.-W. 'bus (4 mins. 19 secs.), Louis Noel (1 min. 51 secs.) and W. L. Brock (scratch) on Morane-Saulniers. Brock proved an easy winner, passing both Noel and Lillywhite and crossing the line 52 secs. in front of Noel, who obtained second place from Lillywhite by 3 secs. Incidentally Brock beat the previous record for pylon-speed at Hendon, made by Noel at the end of June last, his speed being 73¾ m.p.h.

After the race, yet another invader arrived; this time it was Birchenough, back from Leighton Buzzard. He also had got a full share of rain during the day—being wet through! Dunn then put up an exhibition flight on the 'bus, after which Noel went up on Brock's Morane-Saulnier, to beat the record just made by Brock—the magnitude of the stakes involved not being divulged. He flew six laps, banking round the pylons in a wonderful manner, but failed to beat Brock's record by 4⅕ seconds, although he bettered his former record by 1⅘ seconds. The firing of the finishing bomb then brought the proceedings to a close.

Results.

Bomb-Dropping Competition.

		1st Try.	2nd Try.	3rd Try.	Average.
		yds.	yds.	yds.	yds.
1.	R. J. Lillywhite (50 h.p. G.-W. biplane)	18½	9½	9	12
	F. G. Dunn (50 h.p. G.-W. biplane) ...	16	13	8	12
2.	A. E. Barrs (50 h.p. G.-W. biplane) ...	24	7½	11	14
3.	Louis Noel (80 h.p. H. Farman biplane)	60	44	42	49

Final between Lillywhite and Dunn: both 32 yards.

Cross-Country Handicap. 12 miles.

		Handicap.	Handicap Time.
		m. s.	m. s.
1.	R. J. Lillywhite (50 h.p. G.-W. biplane) ...	10 12	19 5
2.	W. L. Brock (80 h.p. Morane-Saulnier mono.)	0 5	20 9
3.	Louis Noel (80 h.p. Morane-Saulnier mono.)	scratch	20 21

Speed Handicap. 8 laps (12 miles).

1.	W. L. Brock (80 h.p. Morane-Saulnier mono.)	scratch	10 53
2.	Louis Noel (80 h.p. Morane-Saulnier mono.)	1 51	11 45
3.	R. J. Lillywhite (50 h.p. G.-W. biplane) ...	4 19	11 48

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FLYING AT BROOKLANDS.

ON Monday morning, last week, Mr. Jack Alcock in from Snitterfield on the 100 Sunbeam, covering the 84 miles in 65 mins. In the afternoon Mr. Skene "looping" on Mr. Creagh's Bristol biplane. Lieut. Young (on Short biplane No. 54) and Frank Beevor (on M.F. No. 70) came in *via* Upavon from Weymouth *en route* for Eastchurch. Messrs. Merriam and Stutt out on Bristol biplanes, and Mr. Gower on a 50 Blériot. Lord Edward Grosvenor testing engine of his Blériot waterplane. Blériot and Bristol pupils out. *Brevet* tests (A) in good style on Bristol biplanes by Lieuts. A. K. Lawrence and Edgar R. Coles.

On Tuesday morning, Vickers, Bristol and Blériot pupils out. Remainder of *brevet* tests by Lieut. A. K. Lawrence on Bristol biplane. Mr. Sippe up to 9,150 ft., with Mr. Creagh, on latter's Bristol biplane in course of an hour's flight. In the afternoon, Messrs. Jullerot, Merriam and Stutt solo, and with pupils on Bristol biplanes. Mr. Gower on 50 h.p. Blériot, Mr. Wilberforce on 50 h.p. Blériot, and Mr. Elsdon with pupil on Vickers biplane. Remainder of *brevet* tests by Lieut. Edgar R. Coles on Bristol biplane. Blériot pupils out. Mr. Sippe on Mr. Creagh's Bristol biplane.

Wednesday morning, Vickers and Blériot pupils out; in the afternoon, Mr. Elsdon solo and with pupils on Vickers biplane, good flights on 50 Blériots by Capt. Dowding and Mr. Wilberforce, Mr. Sippe out on Mr. Creagh's Bristol biplane. Bristol, Vickers, and Blériot pupils out. *Brevet* tests in good style by Mr. A. J. Crick. Lieut. Collet, R.M.A., having been called up for service, and there being no train in time, flew to Eastchurch on the D.F.W. biplane.

Vickers, Blériot, and Bristol pupils out, Thursday morning. Major Brooke-Popham (with Capt. Cholmondeley as passenger) in from Farnborough on M.F. Mr. Sippe up with Mr. Creagh to 11,000 ft. on latter's Bristol biplane in about an hour and a quarter; in the afternoon, Mr. Lusteed (with Mr. Dowland as passenger) in from Hendon on *Daily Mail* Avro *en route* for Shoreham. Mr. Wilberforce on Blériot. Vickers, Bristol, and Blériot school work. *Brevet* tests by Lieut. J. D. G. Saunders, R.F.A.

Friday morning, Vickers and Bristol pupils out; in the afternoon, Mr. Alcock (with Mr. Lane as passenger) started for Shoreham, *via* Tunbridge Wells. Blériot and Bristol pupils out.

Saturday another Sopwith "scout" arrived. In the afternoon, Mr. Hawker "looping" on his Sopwith biplane.

Sunday, in a 30-mile an hour wind, Mr. Hawker gave some fine "looping" demonstrations. Mrs. Lankester, of Kingston, won ballot for free passenger flight.

On August Bank Holiday, owing to the number of pilots and machines called up for service, the aeroplane races had to be abandoned, but Mr. Hawker gave three excellent "looping" demonstrations on his Sopwith biplane before the conclusion of the motor racing. Lord Edward Grosvenor's 80 h.p. Blériot waterplane left for Southampton.

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FLYING AT SHOREHAM.

IN one way and another it has been an eventful week-end at Shoreham, for although the weather and the present war crisis altered the original programme that had been arranged by the management for Saturday to Tuesday last, several flying incidents of note occurred at the aerodrome. On Thursday afternoon, G. J. Lusteed arrived on the 80 h.p. *Daily Mail* Avro from Hendon. After effecting a good landing, he was taxying to the hangar when the landing chassis gave way, causing some slight damage to the machine. Later on in the evening, J. L. Hall arrived from Hendon, with his mechanic as passenger, on his 50 h.p. Avro. He also met with a mishap, for when landing in the dusk he did not see one of the pylons, and colliding with it naturally caused some damage to the machine. Fortunately this was only slight and neither pilot nor passenger were hurt. Hall brought with him a letter from the Lord Mayor of London to the Mayor of Brighton.

On Saturday a 45 m.p.h. wind prevented any racing from taking place, but some excellent exhibition and passenger flights were put up by G. M. Dyott on his 50 h.p. Dyott monoplane, and Eric and Cecil Pashley on the Pashley biplane. Jack Alcock also flew over from Brooklands on the 100 h.p. Sunbeam Maurice Farman. The wind was stronger than ever the next day, Sunday, and the only flight made was a really magnificent one by Lieut. V. Waterfall on the 120 h.p. Austro-Daimler Martinsyde monoplane. On Monday the Home Office prohibition necessitated the abandonment of the *Daily Mail* cross-country race to Tunbridge Wells and back. The large attendance of visitors that turned up at the aerodrome, however, saw a very good display of flying. Both Eric and Cecil Pashley were busy with their biplanes, and other flights were made by G. M. Dyott on his monoplane, Alcock on the Maurice Farman, and Hall on his Avro, which had been put to rights again. Hall also gave an excellent looping demonstration that was much appreciated. Some more exhibition and passenger flights were put up on the following day, Tuesday, the pilots being Eric and Cecil Pashley, J. Hale, and J. L. Hall. Eric Pashley made a spectacular altitude flight on the new 50 h.p. Pashley biplane, attaining a height of 4,000 ft. The star turn that day, however, was made by Hall on his Avro. With Capt. C. Tyrer as passenger, he

made an hour's trip over land and sea, attaining an altitude of 5,000 ft. At this height he shut off his engine and made a vertical dive of 1,300 ft., taking 5½ secs. to fall this distance, and then, with a skilful recovery, landed in safety within the aerodrome.

Flying at Exeter.

ON Wednesday of last week Mr. Marcus Manton fulfilled a flying engagement at the Heavitree Flower Show, Exeter. Although the weather conditions were good, the atmosphere was very treacherous owing to the flying ground being situated in a valley surrounded by clumps of trees, and *remous* were rife. Mr. Manton made six separate flights and looped six times. His last loops were carried out in the twilight, and the white wings of the whirling Blériot made a pretty spectacle looping against the evening sky.

During the second flight of the afternoon the engine of the 50 practically "petered" when Mr. Manton was about half-a-mile from the ground. He had to hazard a long glide over tree tops, chimneys, and the spectators' heads, and he only succeeded in cleverly regaining the ground by a narrow margin.

On landing after his final looping flight, the airman met with a tremendous reception and it was with difficulty that Mr. Manton forced his way to the tent, for down Exeter way looping the loop is a new novelty. As he drove from the ground an excited admirer threw a tiny horse shoe on to Mr. Manton's lap as a mascot.

On the following morning Mr. Manton visited the estate of Sir Channing Wills, of tobacco fame, at Chudleigh Moor. Sir Channing is a keen follower of aviation and some time back purchased the famous Blue Bird Blériot monoplane from Mr. Grahame-White. The machine is fitted with a 25 h.p. Anzani engine and is in quite good condition. Mr. Manton would have taken the machine aloft if one of the wings had not been damaged through the machine having an argument with a hedge recently. Sir Channing has a large private racecourse on his estate, which he is thinking of converting into an aerodrome, and it was for the purpose of obtaining expert opinion on this project that Mr. Manton was invited to view the ground on Sir Channing's estate.

Mr. B. C. Hucks at Southampton.

ON August Bank Holiday Mr. Hucks flew at Swaythling Park, Southampton, in a high wind before a huge holiday crowd. He accomplished many loops, and on one occasion flew upside down for over a mile. Arrangements have been made for him to loop at Shoreham on Saturday and Sunday next.

Alcock Flies to Shoreham.

ON Friday last week, Mr. J. Alcock, on the 100 h.p. Sunbeam-engined M. Farman, with Mr. Lane as passenger, flew from Brooklands to Shoreham *via* Tunbridge Wells. Flying at an average height of 3,200 ft., he covered the 74 miles in 1 hr. 18 mins., at one time having to pass through a violent rainstorm.

Testing the White and Thompson Flying Boat.

THE White and Thompson (Curtiss) flying boat built for the circuit of Britain and fitted with a 120 h.p. Beardmore Austro-Daimler engine was taken out for a test on the morning of Friday last, piloted by Mr. Whitehouse, who was accompanied by Mr. Dodds. With two hours' fuel on board the machine rose after a run of less than 50 yards, showing a very good turn of speed. Just by way of testing her balancing qualities, Mr. Whitehouse let go of the controls for over half-a-mile at a time, and she proved more than equal to the ordeal, so that all concerned with her construction are well satisfied with the result of her maiden trip.

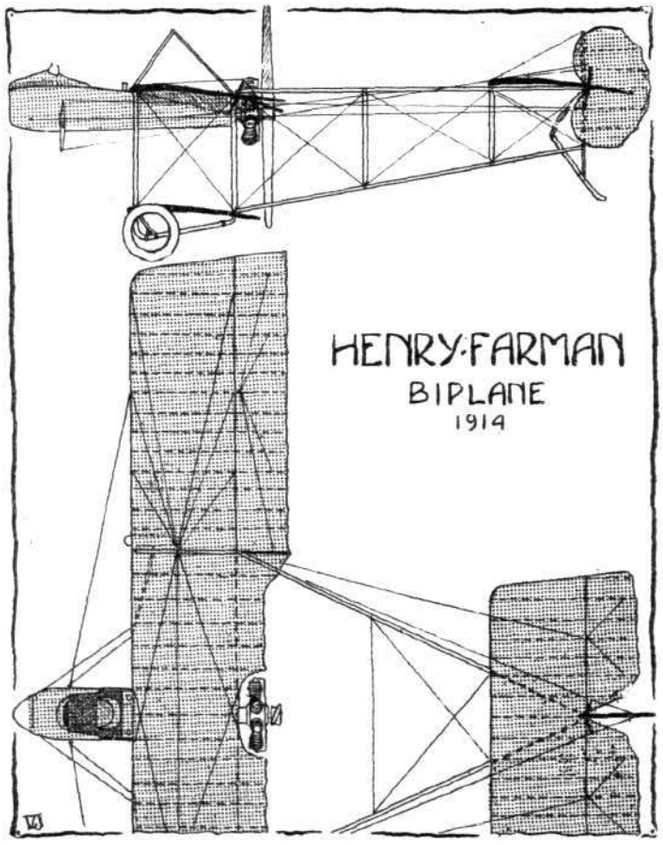
AEROPLANE TYPES.

THE HENRY FARMAN SCOUTING BIPLANE.

SINCE the "headless" type Henry Farman biplane made its appearance in 1912, the design has not been departed from, except in detail improvements, to this day, although Henry Farman has constructed numerous experimental machines from time to time. During the last Paris Salon, however, a new type of Henry Farman made its appearance which, though departing somewhat from the usual Farman practice, still resembled the standard type in many respects. It is almost what might be called a "one-and-a-half-plane," for the lower plane is only one-third the span of the top one. The new type differs from the standard models in that the *nacelle*, instead of being mounted on the lower plane, is slung from the main spars of the top one, a portion of the trailing edge of which is cut away to receive the engine and propeller. In place of the usual chassis, a single running wheel is mounted at each end of the lower plane, bringing the latter very close to the ground. The upper plane extensions, each 3·750 m. span, are braced by upper *cabanes*, and when detached can be placed on the top of the lower plane, the span of the machine then being only a little over 4 m., thus greatly facilitating road transport.

The *cabanes* fold inwards and lie on the top of the centre section of the top plane. Four pairs of struts separate the top and bottom planes, the two inner pairs being attached to the *nacelle*. The tail, which is similar to that on the standard machine, is level with the top plane, and is carried by the usual system of outriggers. The engine, a 50 h.p. Gnome, is mounted in the usual way on the rear end of the *nacelle*, the pilot being seated at the forward end immediately in front of the top plane, where an exceptionally good view all round can be obtained; in fact, this machine is about the best that has been yet designed so far as observation purposes are concerned.

Under the pilotage of Chevillard this new type has proved entirely satisfactory, and in all probability will be seen in this country before long. The principal dimensions are: Span, upper plane 11·500 m.; lower plane 4 m.; length 8·750 m.; chord 1·900 m.; gap 1·400 m.; supporting area 27 sq. m.



"VEE JAY."

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

European War.

ON Saturday last, the Chairman of the Club, the Marquess of Tullibardine issued the following notice :—

"Owing to the grave state of affairs on the Continent, it is possible that the British Empire may be involved in a European War. In such an event, the assistance of every able-bodied man might be required, and it is felt that no class of the community could be of more use to the naval and military authorities than the 'flying men.' The Royal Aero Club desires, therefore, to draw up a list of those aviators who, in the event of grave national emergency, might be prepared to offer their services, and such aviators are asked to forward their names and addresses and particulars of aeroplane owned (if any) to the Royal Aero Club, 166, Piccadilly, London, W. Such a list would not be regarded as official or binding upon anyone, but would be retained in the club so that the information would be readily available in case of emergency."

A large number of civilian pilots immediately volunteered their services. Their names and addresses have been forwarded to the Admiralty and War Office, and already many of them have been called upon.

In addition to aviators, a large number of mechanics have sent in their names for service, and these have also been transmitted to the Admiralty and War Office.

Several members have placed themselves and their motor cars at the disposal of the Royal Flying Corps.

Aviators' Certificates.

The following Aviators' Certificates have been granted :—

855 Air Mechanic Victor Clarence Judge, R.F.C. (Maurice Farman Biplane, Central Flying School, Upavon). July 21st, 1914.

856 Frances Alec Arcier (Caudron Biplane, Hall School, Hendon). July 28th, 1914.

857 Lieut. George Aubrey Kennedy Lawrence, R.F.A. (Bristol Biplane, Bristol School, Brooklands). July 28th, 1914.

858 Lieut. Edgar Ralph Coles (Bristol Biplane, Bristol School, Brooklands). July 28th, 1914.

859 Albert Throne Crick (Blériot Monoplane, Blériot School, Brooklands). July 29th, 1914.

860 Lieut. James Donald Gerhardt Sanders, R.F.A. (Bristol Biplane, Bristol School, Brooklands). July 30th, 1914.

Postponement of the *Daily Mail* Race.

The race round Great Britain for the £5,000 Prize offered by the *Daily Mail* has been postponed.

WORLD'S AVIATION RECORDS TO JUNE 30th, 1914, PASSED BY THE FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE.

Issued by the Royal Aero Club.

AVIATION.

SPEED. Closed Circuit without Alighting.

Distance.	Aviator.	Country Holding Record.	Date of Record.	Time.
kiloms.	*Aviator only.*			h. m. s.
5	J. Vedrines	United States	Sept. 9, 1912	0 1 43⅖
10	M. Prevost	France ...	,, 29, 1913	0 2 56⅘
20	M. Prevost	,, ..	,, 29, 1913	0 5 54½
30	M. Prevost	,, ...	,, 29, 1913	0 8 52⅕
40	M. Prevost	,, ...	,, 29, 1913	0 11 50¼
50	M. Prevost	,, ...	,, 29, 1913	0 14 48⅕
100	M. Prevost	,, ...	,, 29, 1913	0 29 40
150	M. Prevost	,, ...	,, 29, 1913	0 44 38
200	M. Prevost	,, ...	,, 29, 1913	0 59 45⅗
250	J. Vedrines	,, ...	Jan. 9, 1913	2 1 53⅗
300	Gobioni ..	Italy	Mar. 28, 1912	2 49 0
350	Gilbert ...	France ...	Dec. 30, 1912	3 26 16
400	Gilbert ...	,, ...	,, 30, 1912	3 55 27⅘
450	Gilbert ...	,, ...	,, 30, 1912	4 24 44⅘
500	Gilbert ...	,, ...	,, 30, 1912	4 54 6⅘
600	Gilbert ...	,, ...	,, 30, 1912	5 52 38
700	Fourny ...	,, ...	Sept. 11, 1912	9 31 1
800	Fourny ...	,, ...	,, 11, 1912	10 44 45⅘
900	Fourny ...	,, ...	,, 11, 1912	11 59 9⅘
1,000	Fourny ...	,, ...	,, 11, 1912	13 1 12
kiloms.	*Aviator and One Passenger.*			h. m. s.
5	H. Bier ...	Austria ...	Oct. 1, 1912	0 2 58
10	G. Legagneux	France ...	July 20, 1912	0 4 24⅘
20	G. Legagneux	,, ...	,, 20, 1912	0 8 51
30	G. Legagneux	,, ...	,, 20, 1912	0 13 18⅗
40	G. Legagneux	,, ...	,, 20, 1912	0 17 44⅘
50	G. Legagneux	,, ...	,, 20, 1912	0 23 13
100	G. Legagneux	,, ...	,, 20, 1912	0 34 36⅘
150	G. Legagneux	,, ...	,, 20, 1912	1 7 10
200	E. Renaux ...	,, ...	June 9, 1914	1 53 20
250	E. Renaux ...	,, ...	,, 9, 1914	2 21 56
300	E. Renaux ...	,, ...	,, 9, 1914	2 50 28
350	E. Renaux ...	,, ...	,, 9, 1914	3 18 44⅕
400	E. Renaux ...	,, ...	,, 9, 1914	3 47 17
450	E. Renaux ...	,, ...	,, 9, 1914	4 15 29⅘
500	E. Renaux ...	,, ...	,, 9, 1914	4 43 16
kiloms.	*Aviator and Two Passengers.*			h. m. s.
5	Ch. Nieuport	Austria ...	June 30, 1912	0 2 52
10	Ch. Nieuport	,, ...	,, 30, 1912	0 5 45
20	Ed. Nieuport	France ...	Mar. 9, 1911	0 11 59⅘
30	Ed. Nieuport	,, ...	,, 9, 1911	0 17 52⅘
40	Ed. Nieuport	,, ...	,, 9, 1911	0 22 44⅘
50	Ed. Nieuport	,, ...	,, 9, 1911	0 29 37⅘
100	Ed. Nieuport	,, ...	,, 9, 1911	0 59 8
kiloms.	*Aviator and Three Passengers.*			h. m. s.
5	P. Mendelli	Austria ...	Aug. 16, 1912	0 3 48
10	G. Busson ..	France ...	Mar. 10, 1911	0 6 16⅘
20	P. Mendelli	Austria ...	Aug. 16, 1912	0 12 3
30	P. Mendelli	,, ...	,, 16, 1912	0 17 37
40	P. Mendelli	,, ...	,, 16, 1912	0 23 11
50	P. Mendelli	,, ..	,, 16, 1912	0 29 47
100	P. Mendelli	,, ...	,, 16, 1912	0 56 33
kiloms.	*Aviator and Four Passengers.*			h. m. s.
5	G. Busson ...	France ...	Mar. 10, 1911	0 3 34
10	Garaix ...	,, ...	June 10, 1914	0 5 27⅘
20	Garaix ...	,, ...	,, 10, 1914	0 11 0½
30	Garaix ...	,, ...	,, 10, 1914	0 16 32⅘
40	Garaix ...	,, ...	,, 10, 1914	0 22 1⅘
50	Garaix ...	,, ...	,, 10, 1914	0 27 32⅘
100	Garaix ...	,, ...	,, 10, 1914	0 55 12⅘
150	Champel ...	,, ...	April 15, 1913	1 49 11⅗
200	Champel ...	,, ...	,, 15, 1913	2 25 2⅘
250	Champel ...	,, ...	,, 15, 1913	3 1 17
kiloms.	*Aviator and Five Passengers.*			h. m. s.
10	Garaix ...	France ...	June 10, 1914	0 5 32⅘
20	Garaix ...	,, ...	,, 10, 1914	0 11 5⅘
30	Garaix ...	,, ...	,, 10, 1914	0 16 39⅘
40	Garaix ...	,, ...	,, 10, 1914	0 22 14
50	Garaix ...	,, ...	,, 10, 1914	0 27 47⅘
100	Garaix ...	,, ...	,, 10, 1914	0 56 20½
150	Garaix ...	,, ...	,, 10, 1914	1 24 11⅕
kiloms.	*Aviator and Six Passengers.*			h. m. s.
10	Garaix ...	France ...	April 22, 1914	0 5 35
20	Garaix ...	,, ...	,, 22, 1914	0 11 12⅗
30	Garaix ...	,, ...	,, 22, 1914	0 16 48⅘
40	Garaix ...	,, ...	,, 22, 1914	0 22 28⅕
50	Garaix ...	,, ...	,, 22, 1914	0 28 5⅘
100	Garaix ...	,, ...	,, 22, 1914	0 56 44

GREATEST SPEED. Closed Circuit without Alighting.

Aviator.	Country Holding Record.	Date of Record.	Speed per Hour in a Flight of 5 Kiloms.
	Aviator only.		
M. Prevost ...	France ...	Sept. 29, 1913	203·850 kiloms.
	Aviator and One Passenger.		
G. Legagneux...	France ...	July 20, 1912	135·952 kiloms.
	Aviator and Two Passengers.		
E. Nieuport ...	France ...	July 20, 1912	102·855 kiloms.
	Aviator and Three Passengers.		
P. Mendelli ...	Austria ...	Aug. 16, 1912	106·029 kiloms.

Aviator and Four Passengers.			
Garaix ...	... France	... June 10, 1914	109·956 kiloms.
Aviator and Five Passengers.			
Garaix ...	... France	... June 10, 1914	108·303 kiloms.
Aviator and Six Passengers.			
Garaix ...	... France	... April 22, 1914	107·642 kiloms.

DISTANCE. Closed Circuit without Alighting.

Aviator.	Country Holding Record.	Date of Record.	Distance Covered.
Aviator only.			
A. Seguin	... France	... Oct. 13, 1913	1,021·200 kils.
Aviator and One Passenger.			
E. Renaux	... France	... June 9, 1914	500 kiloms.
Aviator and Two Passengers.			
H. Bier	... Austria	... Oct. 1, 1911	112 kiloms.
Aviator and Three Passengers.			
Mendelli	.. Austria	... Aug. 16, 1912	110 kiloms.
Aviator and Four Passengers.			
Champel	... France	... April 15, 1913	250 kiloms.
Aviator and Five Passengers.			
Garaix ...	... France	... June 10, 1914	150 kiloms.
Aviator and Six Passengers.			
Garaix ...	... France	... April 22, 1914	110 kiloms.

DISTANCE. In a Straight Line without Alighting.

Aviator and One Passenger.			
Deroye	... Italy ...	... July 17, 1913	784 kiloms.
Aviator and Six Passengers.			
Garaix ...	... France	... April 22, 1914	110 kiloms.

TIME. Closed Circuit without Alighting.

Time.	Aviator.	Country Holding Record.	Date of Record.	Distance.
hours.	*Aviator only.*			kiloms.
¼	M. Prevost	France ...	Sept. 29, 1913	50
½	M. Prevost	,, ...	,, 29, 1913	100
1	M. Prevost	,, ...	,, 29, 1913	200
2	J. Vedrines	,, ...	Jan. 9, 1913	246·937
3	M. Tabuteau	,, ...	,, 24, 1912	310·281
4	Gilbert ...	,, ...	Dec. 30, 1912	401·900
5	Gilbert ...	,, ...	,, 30, 1912	510
6	Bournique ...	,, ...	,, 31, 1910	490
7	M. Tabuteau	,, ...	,, 30, 1910	522·935
8	Fourny ...	,, ...	Sept. 11, 1912	585·200
9	Fourny ...	,, ...	,, 11, 1912	661·200
10	Fourny ...	,, ...	,, 11, 1912	744·800
11	Fourny ...	,, ...	,, 11, 1912	820·800
12	Fourny ...	,, ...	,, 11, 1912	904·400
13	Fourny ...	,, ...	,, 11, 1912	980·400
hours.	*Aviator and One Passenger.*			kiloms.
¼	G. Legagneux	France ...	July 5, 1912	31·020
½	G. Legagneux	,, ...	,, 5, 1912	66·639
1	G. Legagneux	,, ...	,, 5, 1912	133·469
2	E. Renaux ...	,, ...	June 9, 1914	211·620
3	E. Renaux ...	,, ...	,, 9, 1914	316·228
4	E. Renaux ...	,, ...	,, 9, 1914	422·128
hour.	*Aviator and Three Passengers.*			kiloms.
1	P. Mendelli	Austria ...	Aug. 16, 1912	106·029
hours.	*Aviator and Four Passengers.*			kiloms.
¼	Garaix ...	France ...	June 10, 1914	26·580
½	Garaix ...	,, ...	,, 10, 1914	53·141
1	Garaix ...	,, ...	,, 10, 1914	107·580
2	Champel ...	,, ...	April 15, 1913	164
3	Champel ...	,, ...	,, 15, 1913	247·303
hour.	*Aviator and Six Passengers.*			kiloms.
¼	Garaix ...	France ...	April 22, 1914	20
½	Garaix ...	,, ...	,, 22, 1914	50
1	Garaix ...	,, ...	,, 22, 1914	104·141

DURATION. Closed Circuit without Alighting.

Aviator.	Country Holding Record.	Date of Record.	Time.
Aviator only.			
W. Landmann	Germany	...June 26-27, 1914	21 h. 48 m. 45 s.
Aviator and One Passenger.			
Gaubert	... France	... Aug. 30, 1913	6 h. 42 m. 49⅗ s.
Aviator and Two Passengers.			
Shirrmeister	... Germany	... Nov. 12, 1913	6 h. 16 m. 30 s.
Aviator and Three Passengers.			
Garaix ...	... France	... July 2, 1914	4 h. 3 m. 39⅘ s.
Aviator and Four Passengers.			
Champel	... France	... April 15, 1913	3 h. 1 m. 17 s.
Aviator and Five Passengers.			
Garaix ...	... France	... June 10, 1914	1 h. 24 m. 11⅕ s.
Aviator and Six Passengers.			
Garaix ...	... France	... April 22, 1914	1 h. 2 m. 25⅘ s.
Aviator and Seven Passengers.			
L. Noel	... Great Britain...	Sept. 22, 1913	17 m. 25⅘ s.
Aviator and Eight Passengers.			
Frantz ...	... France	... Mar. 2, 1913	11 m. 28⅖ s.
Aviator and Nine Passengers.			
L. Noel	... Great Britain	Oct. 2, 1913	19 m. 47 s.

ALTITUDE.

Aviator.	Country Holding Record.	Date of Record.	Altitude.
Aviator only.			
G. Legagneux...	France	... Dec. 28, 1913	6,120 metres.
Aviator and One Passenger.			
H. Bier	.. Austria	... June 27, 1914	6,170 metres.
Aviator and Two Passengers.			
H. Bier	... Austria	... June 28, 1914	5,440 metres.
Aviator and Three Passengers.			
E. v. Lossl	... Austria	... June 27, 1914	4,770 metres.
Aviator and Four Passengers.			
Garaix ...	... France	... Feb. 25, 1914	3,050 metres.
Aviator and Five Passengers.			
Garaix ...	... France	... Feb. 4, 1914	2,230 metres.
Aviator and Six Passengers.			
Garaix ...	... France	... Jan. 31, 1914	1,750 metres.
Aviator and Seven Passengers.			
Garaix ...	... France	... Mar. 17, 1914	1,600 metres.
Aviator and Eight Passengers.			
Garaix ...	... France	... Mar. 28, 1914	1,530 metres.
Aviator and Nine Passengers.			
Garaix ...	... France	... Mar. 30, 1914	1,590 metres.
Aviator and Fifteen Passengers.			
Sykorsky	... Russia	... April 25, 1914	300 metres.

BALLOONS.

DISTANCE.

Holder of Record.	Voyage.	Country Holding Record.	Date of Record.	Distance.
Berliner ...	Bitterfeld (Germany)–Bissertsk (Perm, Russia)	Germany	Feb. 8–10th, 1914	kiloms. 3,052·700

DURATION.

Holder of Record.	Voyage.	Country Holding Record.	Date of Record.	Time.
Hugo Kaulen	Bitterfeld (Germany)–St. Petersburg–Perm (Siberia, Russia)	Germany	Dec. 13–17th, 1913	87 hours

ALTITUDE.

Holder of Record.	Voyage.	Country Holding Record.	Date of Record.	Altitude.
Suring and Berson	From Berlin	Germany	June 31st, 1901	10,800 m.

DIRIGIBLES.

DISTANCE.

Dirigible	Voyage.	Country Holding Record.	Date of Record.	Distance.
P. 5 ...	Verona – Sanguinetto – Modena – Casena – Ancona – Venice – Monte-Belluna – Vicenza–Verona	Italy ...	July 30th, 1913	kiloms. 810

DURATION.

				Time.
P. 5 ...	Verona – Cremona – Pavia – Turin – Chivasso – Mortara – Milan–Brescia–Verona	Italy ...	June 25th, 1913	15 hours.

ALTITUDE.

				Altitude. metres.
Conté ...	Issy-les-Moulineaux ...	France	June 18th, 1912	3,080

SPEED.

				Speed per hour. kiloms.
P. 5 ...	Verona – Sanguinetto–Modena–Casena–Ancona–Venice-Monte-Belluna–Vicenza–Verona	Italy ...	July 30th, 1913	64·800

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

THE ROYAL FLYING CORPS.

THE following appointments were announced by the Admiralty on Saturday last :—

E. V. S. Wilberforce, A. R. Arnold, P. L. Holmes, J. D. Maude, L. Gresley, J. P. Wilson, E. R. Whitehouse, and H. Stewart appointed probationary flight sub-lieutenants, R.N., and appointed to the "Pembroke," additional, for course of instruction at the Central Flying School, to date August 1st.

The following appeared in the *London Gazette* of the 4th inst. :—

R.F.C.—Military Wing.—Lieut. William F. MacNeece, Queen's Own (Royal West Kent Regt.), from the Reserve, to be a Flying Officer, and to be seconded ; July 15th, 1914.

The following were announced by the Admiralty on the 5th inst. :

Flight Commander J. Fletcher, to the "Pembroke," additional, for Airship No. 4, in command. To date July 21st.

Flight Lieut. A. Cunningham, to the "Pembroke," additional, for Airship No. 4. To date August 4th.

Acting Flight Lieuts. G. Bromet, G. Hooper, L. Tomkinson, to the "Pembroke," additional, for Eastchurch Naval Flying School, temporarily. To date August 1st.

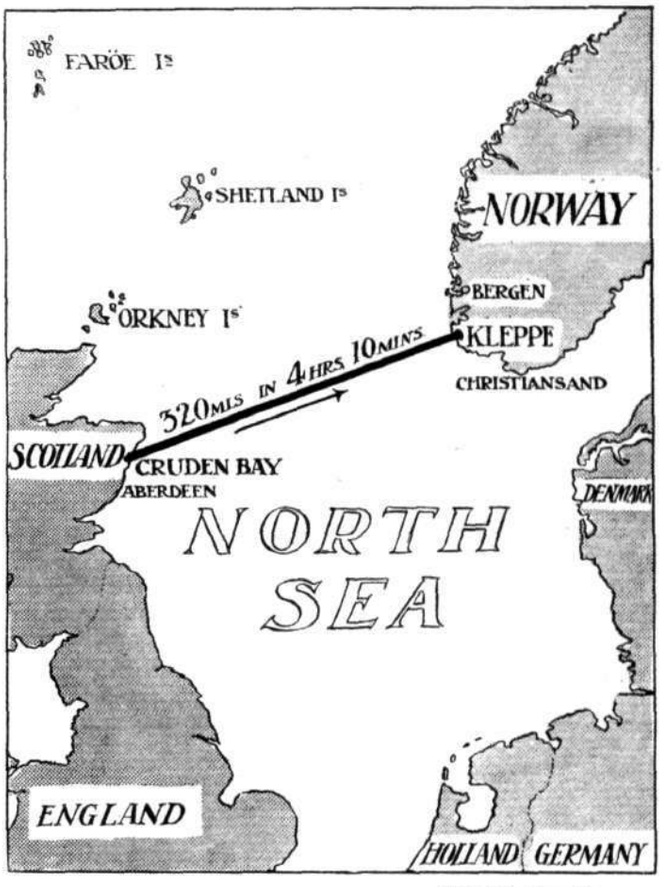
Probationary Flight Sub.-Lieuts. F. Barr, H. Wanklyn, J. Cripps, to the "Pembroke," additional, for Eastchurch Naval Flying School, temporarily. To date August 1st.

J. Thorneley, D. Murray, A. Nickerson, N. Douglas, E. Bauman, J. Levy, all appointed Probationary Flight Sub-Lieutenants, and appointed to the "Pembroke," additional, for Special Course at Eastchurch. To date August 5th.

Sub-Lieut. H. Busteed, R.N.R., appointed Acting Flight Lieutenant, for temporary service, and appointed to the "Pembroke," additional, temporary. To date August 3rd.

LIEUT. GRAN'S FLIGHT TO NORWAY.

ANOTHER definite step forward in the history of aviation was marked on Thursday of last week, when Lieut. Gran flew from Cruden Bay in Aberdeenshire to Klep, near Stavanger in Norway. It is the longest oversea flight without sight of land which has so far been made. For some time Lieut. Gran has been waiting at Cruden Bay for a favourable opportunity to make the trip. This came on the 30th ult., and Lieut. Gran set out on his Blériot monoplane about 8 a.m., but after going about 20 miles over the sea he ran into thick fog, and decided to turn back, landing again at Cruden Bay after being in the air for forty minutes. On getting a telegram from Norway stating that the conditions were fairly favourable on that side, he made up his mind to make another attempt. Starting off at eight minutes past one, he followed the coast for a little way, and then struck a north-easterly course, duly allowing for "drift" owing to the fresh north-westerly breeze which was blowing. After being in the air for three hours, thick fog was passed through, and a quarter of an hour later another bank of it was encountered.



"Flight" Copyright.

Sketch map of Lieut. Gran's splendid flight across the North Sea.

To add to his troubles, Lieut. Gran began to experience the sufferings of air-sickness, while he also noticed that his petrol supply was running very low. He however set the machine to climb, and at 6,000 ft. was relieved not only to see the sun but also to catch a glimpse of the snow-capped mountains of Norway. Adjusting his course, Lieut. Gran stopped his engine, and gliding down through the clouds landed safely at 5.18 p.m., English time, on the shore of a lake 20 miles south of Stavanger. The distance of 320 miles had therefore been covered in 4 hrs. 10 mins. Lieut. Gran immediately afterwards set out for Bergen and Christiania in order to deliver a copy of the *Daily Mail*, which he had carried across, to King Haakon and Queen Maud of Norway. It was announced on Monday that Lieut. Gran had been appointed to the active list as a lieutenant in the Norwegian Army Flying Corps, and that his machine had been purchased by the Government.

With regard to previous long overseas flight, it may be recalled that last September Garros flew 700 miles across the Mediterranean, but *en route* he flew over the island of Sardinia.

THE "ROUND BRITAIN" MACHINES.

ALTHOUGH the Circuit of Britain for the *Daily Mail* prize, which was to have started from Southampton on Monday next, has naturally been indefinitely postponed by the Royal Aero Club on account of the calamity of war in which this country has been involved, the work and money expended by the manufacturers on the various machines are not by any means wasted, since it seems likely that they will be called upon to show their capabilities in actual service instead of in a peaceful race round our coasts. As the nine entries may be said to represent fairly closely the present trend of our seaplane industry, we think that our readers will agree that descriptions of these nine types of seaplanes will be of great interest. We therefore intend to publish in the present and successive issues articles dealing with the construction of these nine "Circuit" machines, dealing with them in the order of their official numbers in the race. As a number of the machines are, at the time of going to press, still in the shops in a more or less unfinished state, it has been impossible to obtain photographs of all of them, and we have therefore had perspective sketches prepared, from which those of our readers who are not experts in "reading" scale drawings may obtain a good idea of the general arrangements of the machines. In addition to these sketches we are giving drawings either to scale, or in some cases as nearly as possible to scale, and in the present issue will be found a table of the chief characteristics of all the machines, which should prove useful for purposes of comparison.

The machine which was officially numbered 1 is:

The Sopwith Tractor Biplane.

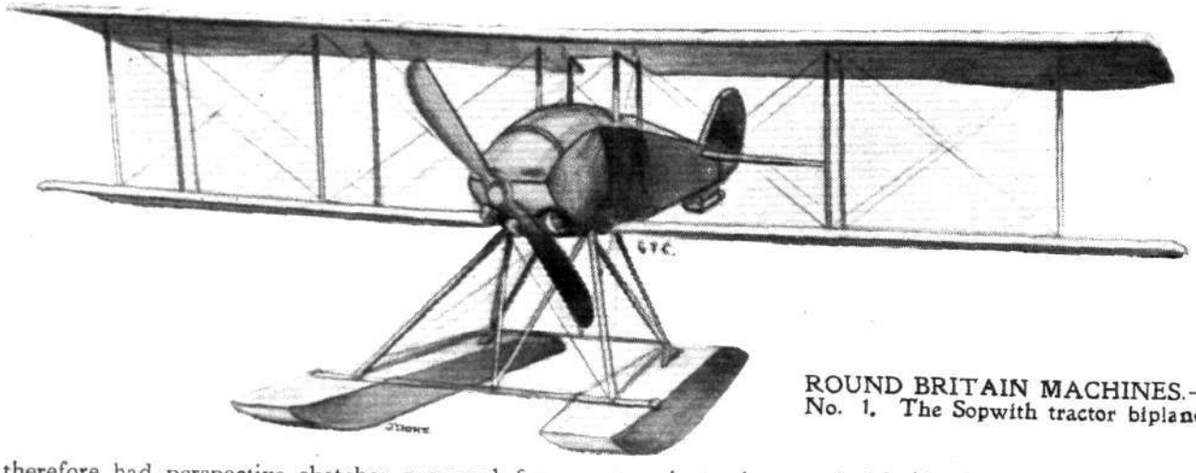
Our readers are already familiar with previous Sopwith machines of the tractor type through illustrated descriptions in FLIGHT, and the Circuit biplane does not differ materially from its prototypes except in dimensions.

Particulars and Official Numbers of Machines entered for Round Britain Race.

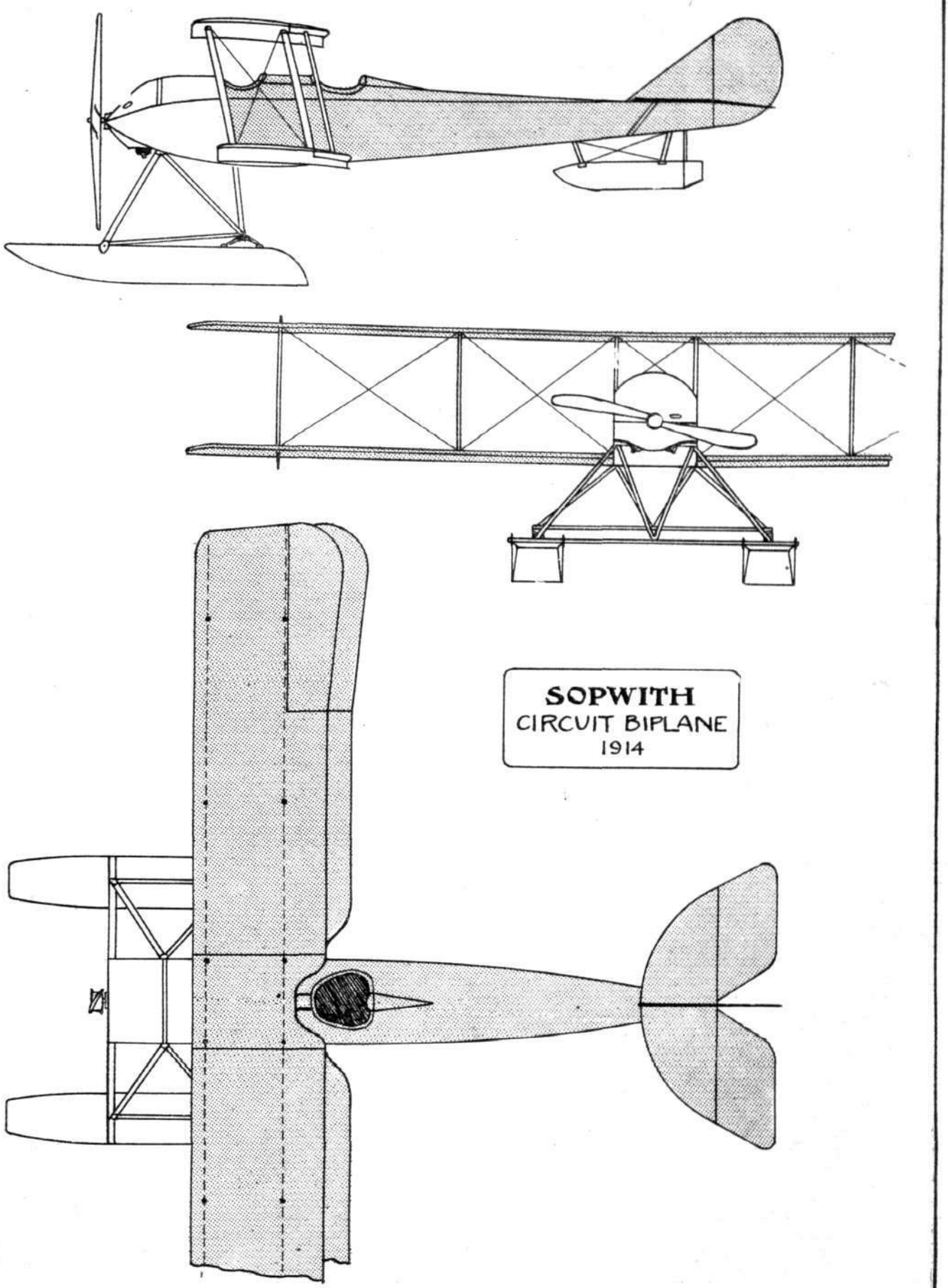
No.	Pilot.	Machine.	Type.	Span. Upper.	Span. Lower.	Gap.	Chord.	Area.	Overall Length.	Lateral Control.	Weight. Empty.	Weight. Loaded.	Speed. m.p.h. Maximum.	Speed. m.p.h. Minimum.	Engine.	h.p.	Type.
				ft.	ft.	ft. in.	ft. in.	sq. ft.	ft. in.		lbs.	lbs.					
1	V. Mahl	Sopwith	T.B.	36	36	4 9	5 1½	350	30 0	Ail.	1550	2190	80	60	Gnome ...	100	R.M.
2	C. H. Collet ...	Beardmore D.F.W.	T.B.	44	40	6 0	5 6	450	25 0	Ail.	1500	2240	85	45	Beardmore-Austro-Daim.	120	V.
3	C. M. Pixton ...	Sopwith	B.B.	55	45	7 0	6 9	600	36 0	Ail.	2300	3180	75	48	Sunbeam ...	200	Vee
4	C. Grahame-White	Grahame-White ...	T.B.	28	28	5 6½	5 6	290	27 3	Ail.	1040	1800	85	45	Gnome ...	100	R.M.
5	F. B. Fowler ...	E.A.C.	T.B.	54	54	5 9	6 6	700	31 0	Ail.	1850	2809	65	45	Green ...	100	V.
6	Capt. E. C. Bass	White and Thompson (Curtiss)	F.B.	45	34	5 9	5 6	400	27 6	Ail.	1600	2400	—	—	Beardmore-Austro-Daim.	120	V.
7	F. P. Raynham ...	Avro...	T.B.	63	38	6 6	6 0	600	37 6	Ail.	2080	2800	70	—	Sunbeam ...	150	Vee
8	S. Pickles ...	Blackburn	T.B.	50	35	—	5 9	464	33 0	Ail.	1500	2200	75	45	Salmson ...	135	Rad.
9	A. Loftus Bryan...	White and Thompson (Curtiss)	F.B.	52	40	5 9	5 6	500	32 3	Ail.	2000	3000	—	—	2 Curtiss ...	100 each	Vee

T.B. = Tractor biplane. B.B. = Bat boat. F.B. = Flying boat. Ail. = Ailerons.
R.M. = Rotary *monosoupape*. Rad. = Radial. V. = Vertical. Vee = Vee type.

From the accompanying illustrations it will be seen that the *fuselage* is slightly more elongated than is usual in the Sopwith Scouts, probably in order to counteract to a certain extent the side area of the floats. Since the machine was flown as a land aeroplane at Brooklands the size of both rudder and tail fin has been increased, so that the vertical surface aft now seems quite capable of taking care of the side area of the two floats, and the nose of the covered-in *fuselage*. This member, which is of rectangular section topped by a turtle back, is built up in the usual way of four ash *longerons*, struts, cross-members, and diagonal bracing. At the rear the *fuselage* terminates in a vertical knife-edge, whilst in the nose of the machine the *longerons* of the *fuselage* converge to join the front engine bearer, which forms a horizontal knife-edge. The aluminium cowl over the engine is of the same type as that fitted on the small scouting biplanes, a type which has been found in practice to combine a good entry for the air with sufficient cooling of the engine.



ROUND BRITAIN MACHINES.—
No. 1. The Sopwith tractor biplane.



THE "ROUND BRITAIN" MACHINES.—No. 1. The Sopwith tractor biplane. Plan, side and front elevation.

In front, the *fuselage* is wide enough to accommodate the motor—a 100 h.p. Gnome *monosoupape*—which is mounted between double bearers, and drives directly a propeller of 8 ft. 6 ins. diameter.

Immediately behind the engine is situated the petrol and oil tanks, whilst an additional supply of petrol is carried in another tank behind the passenger's seat. This is situated sufficiently far forward to provide a good view in a downward direction, whilst from the pilot's seat, placed as it is in line with the trailing edge of the lower plane, which has been cut away near the body, an excellent view is obtained in a downward and forward direction. By cutting away the trailing edge of the centre portion of the upper plane, the pilot is enabled to look upwards and forwards, so that it would appear that the arrangement of the pilot's seat and the staggered planes is such as to give the pilot, as nearly as possible in a machine of this type, an unrestricted view in all directions.

Victor Mahl, the nominated pilot for the Sopwith tractor.

The main planes are of the usual Sopwith type, and are very strongly built. Compression struts are fitted between the main spars in order to relieve the ribs of the strain of the internal cross-bracing. *Ailerons* are fitted to the tips of both upper and lower main planes, and are slightly wider than the remaining trailing portion of the wings in order to render them more efficient. The *ailerons* are operated through stranded cables passing round a drum on the control lever in front of the pilot's seat. The tail planes are of the usual characteristic Sopwith type, consisting of an approximately semi-circular tail plane, to the trailing edge of which is hinged a divided elevator. The rudder is of ample size, and a comparatively large vertical tail fin runs from the rudder post down to the leading edge of the fixed tail plane. The chassis is of a substantial type, and the two main floats are sprung by means of leaf springs interposed between the rear of the float and the rear chassis struts, whilst the floats pivot round their attachment to the lower end of the front chassis struts. The floats are spaced a comparatively great distance apart, in order to render the machine more stable on the water. A tail float of the usual type takes the weight of the tail planes when the machine is at rest.

CORRESPONDENCE.

Brakes for Aeroplanes.

[1881] Considering the above subject to be of general interest, and having noticed that Mr. Shaw has written in support of his recent letter, I feel that you will be willing to extend to me the privilege of a further small space in your columns to enable me to make a reply to the points raised by Mr. Shaw, and a few concluding remarks on the matter.

In the first place, if Mr. Shaw will compare his two letters he will see that one or two remarks contained in them are at variance; for instance, in his first letter he says that he "entirely agrees with me that brakes would be of great value to aeroplanes," and in his recent reply he states that he "does not consider that the time is yet at hand when the effect of brakes on the surface of the ground should be held to be of great importance." Again he says that "a large force will be required to bring the machine quickly to a standstill"—which I take to mean that he does not consider that the brake would be powerful enough to speedily arrest the progress of the aeroplane after alighting, and consequently not capable of fulfilling one of its objects, and later he makes the remark that in his opinion "disaster would soon be encountered by the inexperienced aviator who locked his wheels a second too soon or applied the brake harshly." These last two remarks are again contradictory.

As regards Mr. Shaw's contention that the time has not yet arrived when brakes should be held to be of great importance, this is, of course, absurd; and, as it is quite true that "the question of life still claims the whole of our attention," as he remarks, it is in view of this end that the provision of brakes on aeroplanes is, in my own opinion, very evidently necessary. Perhaps Mr. Shaw overlooks the fact that several accidents have already occurred entailing loss of life, which would undoubtedly have been averted had the machines in these cases been fitted with a brake.

It would be impossible to inadvertently "lock" the wheels; this would not be done without the greatest pressure being deliberately brought to bear on the brake; or so adjusting it as to cause the wheels to be locked, as would be necessary before the engine was started by the pilot preparatory to a flight, to enable him to get into his seat while the engine was running, when he would release his brakes and get away.

The centre of gravity of the aeroplane would not be disturbed by the application of the brake, unless, as I have before remarked, it was very suddenly, deliberately and violently applied, and I need hardly say that no pilot, "inexperienced" or otherwise, would be at all likely to thus use his brake, and it is also quite apparent to anyone that the use of a brake would obviously pull up the machine more quickly than if there was no brake fitted, and therefore Mr. Shaw will have to admit that the brake would accomplish its purpose in this direction.

Your correspondent also states that it has been found best, in the case of moving bodies, to apply brakes from the rear, which is a well-known fact, and that he sees no cause why aeroplanes should prove any exception to this custom; but he does not explain how he proposes to accomplish this. I still maintain that my form of brake is the correct one, and that it would effectively fulfil its purposes, and Mr. Shaw will see in due course that this is the form of brake that will be adopted.

In conclusion, I would draw Mr. Shaw's attention to Mr. G. de Havilland's instructive article on "Aeroplane Undercarriages" appearing in FLIGHT, and would also point out that Mr. de Havilland gives it as his opinion that the most suitable form of brake for an aeroplane is one (such as is the case with my own design) which acts upon the wheels of the landing chassis.

Thanking you in anticipation of your publishing the foregoing, and wishing FLIGHT every success.

Walthamstow, July 28th. V. H. MAIR.

Lord Carbery at Bandon.

As owing to a mishap to his machine Lord Carbery was unable to fly at the Bandon Agricultural Show on July 23rd, he arranged to give a free exhibition on the following Thursday in the grounds of Castle Bernard, the seat of the Earl of Bandon. Lord Carbery arrived on his aeroplane shortly before 5 p.m. with a passenger. A few minutes later the machine was in the air again, and after a circuit of the town Lord Carbery looped the loop twice, did the dead-leaf drop and other exhibition flying. On descending he was given a most enthusiastic reception, and was presented with an address by the local branch of the Irish National Volunteers. Lady Carbery was presented with a handsome bouquet. At 6.20 p.m. Lord Carbery again ascended with a passenger, and after a few circuits of the ground flew away to Cork.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

Naval Flying.—Most of the machines have been out during last week and a number of other machines have arrived from other stations, but for obvious reasons no details can be published. The station is now strictly guarded by a strong body of troops.

Civilian Flying.—Mr. F. McClean made a flight on Wednesday from Harty to Ramsgate on his 160 h.p. Short, taking two passengers, returning on Saturday to Harty. On Sunday morning he flew to the Isle of Grain and placed his machine at the disposal of the Admiralty.

The weather has been fine but windy during the week.

Brooklands Aerodrome.

Blériot School.—Rolling and straights, Mr. G. L. Pitt, 42 mins.; Mr. J. Brooke, 72; Mr. H. Cooper, 65; J. Miller, 25; Comte FitzJames, 10; Capt. Dowding, 30; Capt. Smith Barry, 5. Circuits and eights on 45 h.p. Anzani, Mr. G. L. Pitt, 16 mins.; Mr. R. Creagh, 13; Mr. A. Crick, 40; Mr. H. O'Hagan, 10; Mr. W. Treloar, 10; Capt. Dowding, 15; Capt. Smith Barry, 20. Mr. Victor Wilberforce 45 mins. on 50 h.p. Gnome. Mr. A. Crick took his ticket.

Bristol School.—Monday, last week, passenger tuition to Lieuts. Moule (4), Hewitt (2), Capts. Bernard (3), Napier (2). Solo and figures of eight, Lieuts. Lawrence (3), Coles (2).

Tuesday, passenger tuition to Lieuts. Moule (3), Hewitt (2). Solos and figures of eight, Lieut. Sanders (2), Mr. Collins (2). *Brevets* taken by Lieuts. Lawrence and Coles.

Wednesday, passenger tuition to Lieuts. Hewitt (2), Bagley (3). Straights, Lieut. Sanders (2), Mr. Collins (2).

Thursday, passenger tuition to Lieuts. Moule (2), Bagley (3), Hewitt (2). Solos and figures of eight Lieut. Sanders (2). *Brevet* taken by Lieut. Sanders in good style.

Friday, passenger tuition to Lieuts. Hewitt (4), Bagley (4), Moule (2). Saturday, windy, no flying.

Vickers School.—Tuesday, last week, with instructor: Messrs. Klingenstein and Weir.

Wednesday, with instructor: Messrs. Klingenstein and Weir. Mr. Klingenstein solos.

Thursday, with instructor: Messrs. Klingenstein and Weir. Mr. Klingenstein solos.

Friday, with instructor: Messrs. Klingenstein and Weir.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday, last week, Messrs. Wyles, Stakker, Murphy, Strickland, Toolis, straights with Instructors Barrs and Dunn.

Tuesday, Messrs. Duncan, Carabajal, Easter (new pupil), rolling with Instructor. Messrs. Courtney, Lister, Hawkins, Duncan, straights with Instructor Dunn.

Wednesday, Messrs. Duncan, Strickland, Courtney, straights with Instructor Barrs.

Thursday, Messrs. Courtney, Duncan, Wyles, Upton, Lister, Easter, Toolis, Strickland, Stalker, Hawkins, straights with Instructors Birchenough, Barrs and Dunn. Mr. Carabajal rolling with instructor.

Friday, Mr. Carabajal rolling with instructor behind. Messrs. Duncan, Easter, Hawkins, Murphy, straights with Instructors Barrs and Dunn. Mr. Howitt solo straights, &c.

Beatty School.—Last week pupils out with Messrs. Baumann and W. Watts on dual-control biplanes. Messrs. Allen 18, Ruffy 17, Bentley 28, Roche-Kelly 20, Leong 10, Travers 5, Smith 22, Lieuts. Maguire 6 and Dickinson 36, Princess Ludwig of Lowenstein Wertheim 16.

British Caudron School.—Monday, last week, too windy for school to go out.

Tuesday, school out at 5 o'clock, under the instruction of R. Desoutter and R. M. Murray. R. Desoutter trial flight. Mr. Murray straights. Messrs. Cormier and Abbott doing half circuits. Lieut. Mayne (new pupil), rolling practice.

Wednesday, at 5 a.m. school out, under the instruction of R. Desoutter and R. M. Murray. Messrs. Abbott and Mayne doing straights. Mr. Cormier half circuits.

Thursday, too windy.

Friday, misty at first. School out at 6.30 a.m. R. Desoutter trial flight. Messrs. Abbott and Cormier straights.

Saturday, windy.

Aerodrome Pilots for Active Service.

AT the various aerodromes the pilots and mechanics have not been backward in answering the call of the Royal Aero Club. At the Shoreham aerodrome, for instance, Messrs. C. Pashley, E. Pashley, J. Hall, G. M. Dyott, W. Elliott and Capt. Tyrer, at once offered their services to the Admiralty, by whom they were accepted.

At Brooklands several of the pilots who have been most active have been called up for service, including Lieut. C. H. Collet, R.M.A., Lieut. V. Waterfall, Lieut. Wilberforce, and Lieut. Guy Blatherwick, R.N.

All will join in wishing these pilots the best of luck.

A quartette of pupils who have recently taken their Royal Aero Club certificates at the Bristol Flying School, Brooklands, with their instructor, Mr. F. Warren Merriam, in the centre. From left to right, Lieut. Richards, Mr. Chambers, Mr. L. Gresley and Lieut. Smythies.

EDDIES.

MR. HUCKS is probably the only man in the world who has seen two sunsets in one day. This happened at Glasgow a week or two ago. After an evening flight, whilst standing on the ground he watched the sun disappear over the horizon. About 15 minutes later he ascended in his monoplane to a great height, caught up the sun again, and watched it set for the second time. A genuine case of seeing double.

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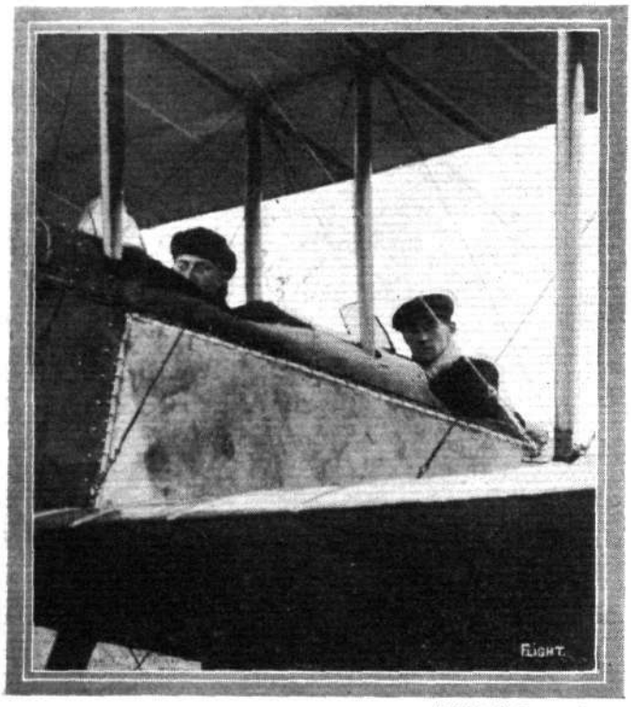
The 80 h.p. Bristol tractor biplane purchased by Mr. Creagh is doing some very good work at Brooklands.



"Flight" Copyright.

Messrs. Creagh and Sippe at Brooklands, looking a bit cold on their return to earth after reaching an altitude of 11,000 ft. on Mr. Creagh's Bristol. Needless to say, the cold did not extend to their lower extremities.

On Thursday of last week Mr. Sippe went out for altitude accompanied by the owner of the machine. After being away beyond the eye of man for about an hour the "Bristol" was seen to be returning in beautiful spirals, and when she was sufficiently low it was also seen that the propeller was stopped. After executing some exceedingly small spirals and steeply banked turns, Mr. Sippe made a perfect landing without re-starting his engine. 11,000 feet was the total of this little climb.

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Last week I had a sight of the Beardmore D.F.W. hydro. entered for the "Circuit" which is nearing completion at the D.F.W. works at Brooklands. With the exception of the wings everything in its construction is of steel. The *fuselage* for instance is built up of four *longerons* of steel tube connected with struts and cross members of the same material. The struts are joined to the *longerons* by a special method of welding which, according to Mr. Kny, does not suffer from the same disadvantages as the ordinary type of welding. The inter-plane struts, which are stream-lined steel tubes, are provided at their lower ends with short levers by means of which they can be instantly detached from the wings without interfering with the adjustment of the bracing cables. It is thus possible to erect and dismantle the wings in a very short time, and in addition this arrangement does away with the necessity of "tuning up" the machine every time it is erected. For military purposes the time thus saved would be of enormous value.

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Following on the great monoplane which was built by Martin and Handasyde for the trans-Atlantic flight, and the small scouting biplane now in course of construction at this firm's Brooklands works, I learn that the drawings are being got out for a huge new monoplane. In its general arrangement the latest Martinsyde will follow the lines of its predecessors, but it is understood that the occupants' seats will be differently arranged. The pilot will sit very far back in order to get a good view in all directions, while the passenger's seat will be placed sufficiently far forward to enable him to look beyond the leading edge of the wings.

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Among the passengers taken up by Mr. J. L. Hall at Hendon on Thursday of last week was Mr. G. T. Temple, whose son, Mr. G. Lee Temple, it will be remembered, met with a fatal accident whilst flying at Hendon in

"Flight" Copyright.

Mr. Raynham enjoying a short rest between testing "Avros" at Brooklands.

January last. This was Mr. Temple's first flight since the tragic occurrence, and in thus giving proof of his belief in aviation Mr. Temple is carrying out the often expressed wish of his son that in the event of anything happening to him his father should not give up interest in the great science.

Mr. Frank Goodden had a rough time of it some time ago when he was flying cross-country on his Morane monoplane. Whilst passing over some extensive woods he was caught in a hailstorm which nearly blinded him, and to make matters worse his engine began to give forth a rattling noise which seemed to indicate that the engine cowl was touching the valve rockers. Switching off for a few moments the noise ceased, but a few minutes after switching on again there was an awful crash, and after a final splutter the engine stopped entirely. Fortunately, Goodden was up a good height, and after circling round once or twice he succeeded in picking out a small field among the trees in which a safe landing was effected. On examination, the engine was found to be very badly damaged owing to a broken connecting-rod. It was also found that the hail storm had not agreed with the varnish on the wings, and Goodden tells me that the fabric was absolutely bare, without a trace of "dope" on it. The field in which he landed was the only one for miles round the district in which a landing could possibly have been made without smashing the machine.

"Flight" Copyright.

Mr. Lusted, accompanied by a passenger, on the *Daily Mail* 80 h.p. Avro just off for Shoreham from Brooklands.

Capt. Tom D. Gunn, who is said to be the first Chinese pilot-constructor. He has lately been commissioned by the Chinese Government, and is at present in Pekin, conferring with the military authorities regarding the building of a number of machines.

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A small Wright racing biplane is being erected at the Beatty sheds at Hendon, and so we may expect to see Beatty doing some "stunt" flying as soon as the machine is ready.

The new "Baby" differs from standard Wright biplanes not only in dimensions but also in details. The upper plane has a very pronounced overhang, and is fitted on top with king posts, to which are secured the upper bracing cables that take the weight of the extensions when the machine is on the ground. The pilot's seat and the front portion of the skids fold back against the lower plane, and when the tail booms are dismantled the wings take up very little room. The tail is of the standard Wright design, and consists of twin rudders pivotted between the tail booms and the usual flexing elevating plane. The machine will be fitted with a 50 h.p. Gnome engine—arranged alongside the pilot's seat—driving by chains the two propellers, which are of the usual Wright type and revolve in opposite directions.

Miss Murray, who has gained so much popularity by her playing and singing at the Hendon Aerodrome.

"ÆOLUS."

SIDE-SLIPPING AT LOW SPEEDS.

By B. MELVILL JONES, B.A.

FROM a consideration of the various recent aeroplane accidents it would appear that a large proportion have been caused, or at least accompanied, by side-slipping at low speeds. It therefore becomes important to consider how far the lateral stability of an aeroplane is affected by excessive loss of speed, and to investigate the particular features of a machine which are likely to cause either instability or loss of control under these conditions.

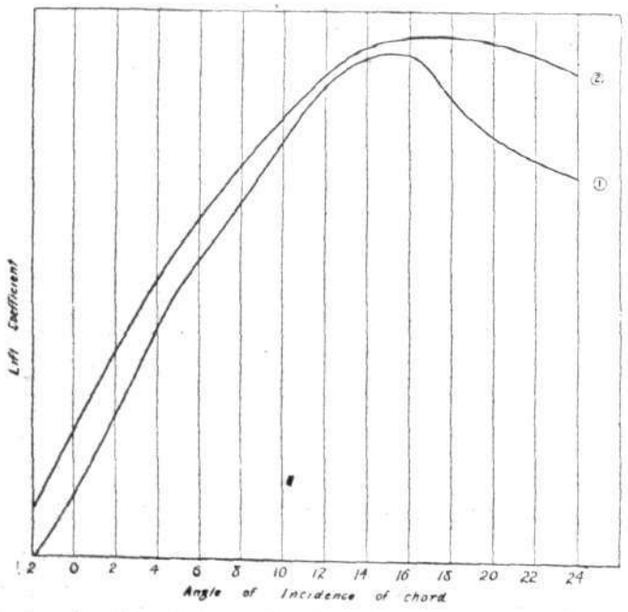
It has been shown in various works on the stability of aeroplanes that the lateral stability depends, primarily, upon nine "resistance derivatives" or coefficients, which themselves depend upon the shapes of the various parts of the machine; but we shall confine our attention to two of these derivatives only, namely, the coefficients of "rolling due to rolling" and "rolling due to side-slip"; actually they are the rolling couples which would be induced by unit rate of rolling and by unit velocity of side-slip respectively.

Considering first the coefficient of rolling due to rolling. For all aeroplanes flying normally this is negative, that is to say, the couple induced is in the opposite direction to the angular velocity of the roll which induces it, the reason for which is that the angle of incidence, and therefore the lift of the downward moving wing, is increased, giving a net upward force upon this wing, whilst for a similar reason there is a net downward force on the upward moving wing.

Now it has been demonstrated, and is in fact almost obvious from first principles, that a negative coefficient of rolling due to rolling adds a positive damping term to the equations of lateral motion, and thus tends to reduce any oscillations which may occur. It has further been shown (*see* Report 77 of Advisory Committee, 1912–13) that this coefficient is almost always sufficiently large to be of the greatest importance in influencing the lateral stability. If now, for any reason, this coefficient becomes positive, its effect on the lateral stability is entirely different from the above, as it then introduces a negative damping or "forcing" term into the lateral oscillation equations, and tends to cause any rate of roll accidentally started to increase indefinitely.

The preceding paragraph may become more intelligible to the non-mathematical reader if it is observed that a negative coefficient of rolling due to rolling has the same effect on the lateral oscillations of an aeroplane as a dashpot has upon an ordinary wind speed indicator, whilst a positive coefficient has the effect of turning the aeroplane into an auto-rotator, which is a device that, when pivoted in a wind in the same way as a common propeller, will continue to spin in the direction in which it is first started.

If we construct a curve showing how the lift coefficient for the outer portion of the wings near the tips varies with the angle of incidence, it is quite easy to show that the coefficient of rolling due to rolling is numerically proportional to the slope of this curve, but



is negative when the curve is positive, and *vice versâ*. This being so, it follows that so long as the lift near the wing tips of an aeroplane *increases* with increase in the angle of incidence, the rolling couple due to rolling tends to damp out any lateral oscillations which may occur; but if, under any circumstances, the lift in this part of the wings *decreases* with increase in the angle of incidence, the couple tends to make the aeroplane unstable—the influence of the couple on the stability being in both cases proportional to the slope of the lift curve.

The accompanying figure shows two lift coefficient curves taken from actual experiment on two different wing sections. It will be observed that in No. 1 of these curves, at an angle of incidence of 18°, the lift *decreases* with angle of incidence quite as rapidly as it increased at lower angles, and hence at 18° an aeroplane having a wing section near the tips which gives a lift curve similar to No. 1 would have its coefficient of rolling due to rolling reversed in sign, but approximately equal numerically to the ordinary negative coefficient at small angles of incidence. Now, since it has been stated above that the coefficient of rolling due to rolling under normal conditions is sufficiently large to greatly modify the lateral oscillations, it follows that the equally large reversed coefficient above considered will have a powerful destabilising effect. Such an aeroplane would, in fact, show itself violently unstable laterally, and would almost certainly roll over on its side unless checked by the pilot or by some automatic stabilising device.*

Turning our attention now to the coefficient of rolling due to side-slip. This coefficient is usually provided in practice either by the familiar dihedral angle or by means of fins placed above the centre of gravity. For lateral stability the coefficient must be such that the wing tip towards which sideslip is taking place should tend to rise. Now it is easy to show that the portion of this coefficient which is provided by a dihedral angle is approximately proportional to the product of the dihedral angle and the slope of the lift curve near the tips of the wings, and hence that the coefficient will reverse in sign and provide a destabilising effect under exactly the same conditions as were necessary to reverse the coefficient of rolling due to rolling. The effect of this reversal of sign upon the stability may not, however, be so serious as in the former case, since the latter coefficient is usually kept down in practice to a small positive quantity, and hence will only become a small negative quantity when the reversal of sign occurs.

It should be observed that the portion of this coefficient which is due to the vertical fins will not be so affected, since the force on the fins is uninfluenced by the angle of incidence of the main planes.

It will, of course, be obvious that the phenomena above described occur when the wings have passed their critical angle, and therefore when the speed of flight has been reduced sufficiently to "stall" the machine. It thus appears that when such a machine as the above is stalled, any lateral stability which it may have had at ordinary speeds may be not merely removed, but actually replaced by a powerful lateral instability. If in addition to this the rolling control of the machine is obtained by warping the wings, the effect of any given movement of the warp lever will, as is well known, be reversed under exactly the same conditions as those above considered (*see* Fig. 18, Report 72, of Advisory Committee, 1912–13), and such a machine on stalling, besides having a strong inherent tendency to roll over, will become quite uncontrollable by a pilot trained to use his warp lever under normal conditions.

Now stalling in a properly designed machine, is always followed by a dive of some sort, in order to regain speed, so that the only question to be considered in this connection is whether this is to be a simple nose dive or a combined roll, side slip, and ultimate nose dive. No form of dive, however complicated, need necessarily be fatal, given sufficient air room, but it appears from a consideration of the accidents which have occurred recently that the nose dive which is complicated by side slipping and rolling may require much more air room, and, therefore, be much more dangerous, than the simple dive when uncomplicated in this way. If this is really the case, it is of the greatest importance to determine what particular features an aeroplane should possess in order that the pilot, after stalling, may be able to keep the machine on an even keel until sufficient speed has been regained.

For the reasons given earlier in this article it would appear that the following features in the design of an aeroplane should give the greatest safety in this respect:

1. Wings in which both the angle of incidence and "camber" are partially "washed out" towards the tips, the maximum thickness near the tips being kept well away from the leading edge.

The washing out of the angle of incidence should cause the critical angle near the tips to occur later than over the body of the wing. The washing out of the camber should cause the critical angle to

* The curves of lift shown in the figure are as a matter of fact average lift curves for a whole aerofoil, and the writer does not know of any experiments up to date which show definitely whether the negative slope of curve No. 1 can exist for the actual tip of a wing. The possibility of a large negative coefficient of rolling due to rolling cannot, therefore, be rigidly demonstrated at present, and is merely a reasonable inference from existing data. The fact, however, that a warped wing has been found to give a negative rolling moment after the critical angle is passed tends strongly to support this inference.

occur later in this region and reduce its severity when it does occur (*see* Plate 4, Report 60 of Advisory Committee, 1911–12).

The position of the maximum camber well back from the leading edge should make the lift curve approximate to No. 2 of the figure rather than No. 1, and hence whilst not preventing loss of stability should prevent any serious instability from occurring (*see* Fig. 2, Report 72 of Advisory Committee).

2. The use of independent *ailerons* of low aspect ratio for the rolling control instead of warped wings; these *ailerons* being not simply continuations of the trailing edges but in a different plane to the wings.

The critical angle for small aspect ratios is, however, very much higher than for large ones (see *Resistance de l'air et l'aviation*—M. Eiffel), and hence such *ailerons* if at zero angle of incidence at the normal flying angle would not reach their critical angle until long after the main planes.

3. The centre of pressure of the equivalent fin system of the machine without the main planes should be above the centre of gravity, so that the coefficient of rolling due to side-slip will remain of the correct sign for stability even when the stabilising effect of the dihedral angle has vanished. Under ordinary circumstances, of course, it is only necessary that the total coefficient due to both the dihedral angle and vertical fin system should be sufficiently positive.

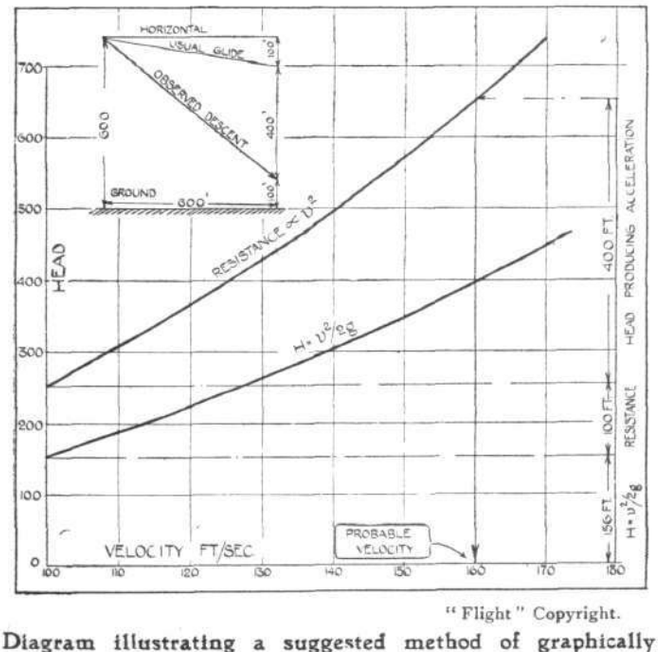
Any machine embodying the above features should not become more than slightly unstable on stalling, and should be perfectly controllable at speeds considerably below the critical, and hence could be kept on an even keel by a skilled pilot until the nose dive and subsequent recovery of speed has taken place. On the other hand, a machine in which none of these points have been attended to may be such that it must inevitably commence to turn over whenever it is stalled, no matter how skilled the pilot may be. A machine which uses warping wings and has the maximum camber near the tip of the wings close to the leading edge should be particularly dangerous in this respect, whilst a machine having a very low fin area neutralised under normal conditions by a dihedral angle might be dangerous owing to the destabilising effect of the low fin system remaining after the dihedral effect has disappeared. Seaplanes, owing to the low position occupied by the fin area of the floats, are particularly liable to this danger.

It is, of course, possible that the danger from lateral instability on stalling may not ultimately be very serious owing to the time taken by the pilot to dive and regain speed being so small as to prevent the effects of the instability from becoming serious; but in any case it is important that any possible causes which may produce instability should be clearly understood, even if their effects are ignored in the actual design.

PROBABLE SPEED ON STEEP DESCENTS.

THE estimation of the probable speed of an aeroplane that is observed to make a very steep descent would seem to be best treated graphically. Allowing for the effect of the wind, the equivalent descent in still air is drawn as a slope. For example, suppose an aeroplane flying at 600 ft. altitude descends to an altitude of 100 ft., while travelling a distance of 600 ft. in calm air. The question is, what is the probable velocity of the machine when it reaches the lower altitude.

It is necessary to know the normal gliding angle of the machine, so as to be able to allow for its inclusive resistance at its proper flight speed, which also must be known.



"Flight" Copyright.

Diagram illustrating a suggested method of graphically solving problems relating to the probable speed obtained by very steep descents.

Gliding in the ordinary manner, the aeroplane would, for example, descend only 100 ft. in the distance of 600 ft. This 100 ft. thus represents a measure of the resistance of the machine at its normal velocity, which, for the sake of example, is taken as 100 ft. per sec.

Had the aeroplane only descended 100 ft. in travelling 600 ft., its velocity at the beginning and the end of the journey would be the same. In the case under consideration, however, the aeroplane is observed to descend 500 ft. instead of 100 ft., so that there remains a head of 400 ft. over and above that required to maintain steady motion against the resistance of the machine.

This 400 ft. head is thus available to produce acceleration, and were the machine falling in vacuum the velocity at any altitude would be available from the fundamental formula $H = v^2 \div 2g$, where H is the distance through which the machine has fallen under the acceleration of gravity g, and v is the velocity in feet per second acquired.

A chart is drawn with head and velocity as the ordinates and abscissa, and on this chart is drawn a curve representing $H = v^2 \div 2g$.

Above this curve as datum line is drawn another curve originating with a head 100 ft. above the first curve, showing the resistance as proportional to v^2. The resistance is, of course, measured in the form of head.

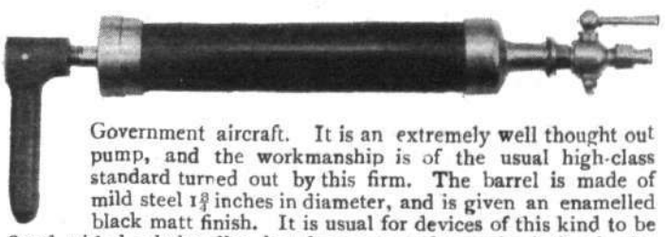
It is an arbitrary assumption to suppose that the resistance of the machine increases as v^2, but from certain curves published in the Technical Report it would appear as if the inclusive resistance of an aeroplane does increase approximately in this ratio at high speeds, and it is only speeds above the normal fast flying speed of the machine that are under consideration at present.

The curve thus drawn measures at any point the inclusive resistance represented by the speed corresponding to that point on the curve. It thus measures the head required to produce the speed. In the case in question, there is a total head of 500 ft. over and above the head corresponding to the normal velocity of the machine in terms of $H = v^2 \div 2g$.

Of this 500 ft., 100 ft. represents the normal resistance at the normal speed, but the other 400 ft. is the head producing acceleration. Measuring off these heads on the vertical scale indicates a point on the higher curve that is situated over the velocity scale at 160 ft. per sec. On the assumptions laid down, it may thus be estimated that the probable velocity for the case in question is somewhere in the neighbourhood of 110 miles an hour.

A ROTAX PRESSURE PUMP.

THE accompanying illustration shows an exclusive design of pressure pump made by Messrs. the Rotax Motor Accessories Co., of Great Eastern Street, London, E.C., which has been fitted on many



Government aircraft. It is an extremely well thought out pump, and the workmanship is of the usual high-class standard turned out by this firm. The barrel is made of mild steel $1\frac{3}{8}$ inches in diameter, and is given an enamelled black matt finish. It is usual for devices of this kind to be fitted with knob handles, but the pump under notice is fitted with a black ebonite lever handle, which enables a firm grip to be obtained—an important feature in fittings of this kind for aircraft.

A spring valve is incorporated in the pump, and the delivery pipe is fitted with a relief cock. The latter, together with the delivery pipe, and upper and lower caps are finished in polished brass, and thus form a smart contrast with the black handle and barrel.

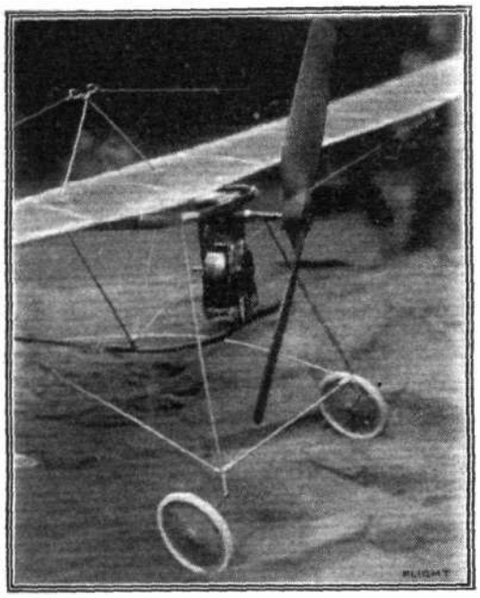
Models

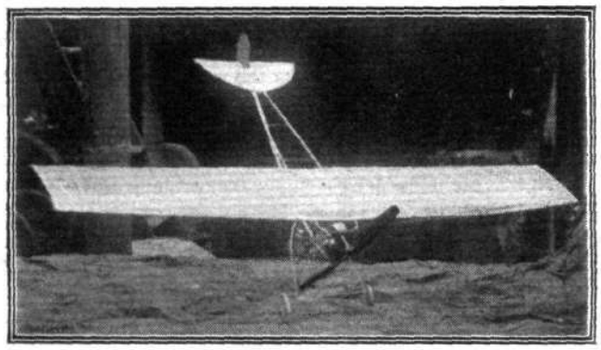
Edited by V. E. JOHNSON, M.A.

Model Flying Boats.

THE evolution of that particular kind of hydro-aeroplane generally known as a flying boat does not appear to have met with much practical success in models up to the present time.

No model flying boat that we know of has made a flight of a a hundred yards or a duration of even fifteen seconds; and, speaking personally, we have not actually seen anything that could be really called a flight with a model of this character. We have seen one rise from the surface of the water, soar up into the air at an angle





Messrs. T. W. K. Clarke and Co.'s spring-driven model. Above is seen an enlarged view of the spring motor, propeller and chassis.

of about sixty degrees, and then plunge down, nose first, into the water at about the same angle. We have also seen a model rise off the water (from a small pond), fly low for about fifty yards, and then sit down on its tail, just as if it were tired. The problem is undoubtedly one of some considerable difficulty, far more difficult than that of the aeroplane-on-floats type; and it appears very unlikely that the same duration could be obtained with such a type of model as with the ordinary type of hydro-aeroplane. We see no reason, however, why a duration of at least half a minute should not be obtained, as the result of a little careful experimenting.

So far no competition appears to have been arranged for such a type of model, and unless the competition was strictly limited to such a type, nothing is likely to be done by this means, because no competitor is likely to put such a model into a competition with machines of the ordinary hydro-aeroplane type, on account of the shorter duration which would be made by the model of the flying boat type.

This is rather an unfortunate state of affairs, because this type is generally regarded as *the* type of the future so far as full-sized work is concerned on anything like rough water. At present, it is true, it has not met with the success that its designers anticipated, but in all probability the question of *size* has had much to do with this. When, in course of time, much larger machines are *built* than any even now only *contemplated*, this type will in all probability come into its own. If the solution of the problem does not lie in this direction, *i.e.*, a boat or hull carrying a flying superstructure, which can be cast off at will, it is extremely difficult to see in what manner the problem can be solved. When we begin to seriously consider such a type, in model form, we appear to be strictly limited as to our design. So far as the writer's personal experiments go in the matter this design must contain practically all the following *essential features:* It must have twin propellers, they must be tractor screws; it must be a biplane, the bottom plane about half the span of the top, the two small balancing floats at or very near the tips of this lower plane. The hull should preferably have a step slightly in advance of the c.g. of the machine. A good type of hull to try appears to be the "fiddle-back" type like that used in the Donnet-Levéque. The motor rod and propeller brackets, &c., would have to be put in the usual place for a twin tractor model and connected to the hull by suitable struts and bracing. The hull would have to be built *as light as possible.*

A model on the above lines appears to be most likely to give some initial measure of success. Rather more than a year ago the writer endeavoured to construct a single propeller model, tractor type, in which the rubber motor was enclosed in the hull, twin gearing was used; and in which the propeller was driven by a light chain and chain wheels; but the efficiency of the driving gear was far too low and the friction far too great for any practical success. In trying such a design again, I should substitute for the chain and chain wheels some large and very light cogs all of the same size, four at most should be sufficient. Could such a model, rubber driven, be got to do a duration of only fifteen to twenty seconds, it would be of considerable interest.

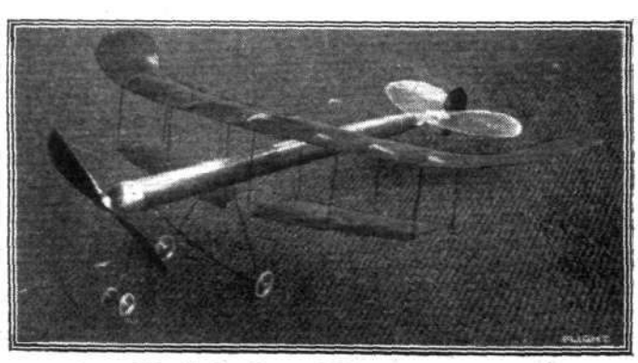
We trust that the foregoing suggestions will lead to some of our readers making some experiments, either in the direction indicated or in some other which may appear preferable to them. Such experiments could not fail to be of interest, and we see no reason why they should not be successful; they should certainly appeal to anyone desirous of trying something new.

A 6 to 10 oz. model would be quite large enough to begin with.

A Clock Spring Driven Model.

We give this week two illustrations of an interesting model, recently constructed by Messrs. T. W. K. Clarke and Co., of Hampton Wick, and which has accomplished to date a duration of 13 seconds. As can be seen from the photograph, the positions of the planes, the dimensions and weight distribution correspond practically speaking to those of a full-sized machine.

The spring motor fitted to the machine is not an ideal one for model aviation work, by any means; it could be considerably lightened, there are too many cogs and consequent friction. With an improved type of spring motor it is hoped to double the present



Mr. J. E. Rogers' Olympia model.

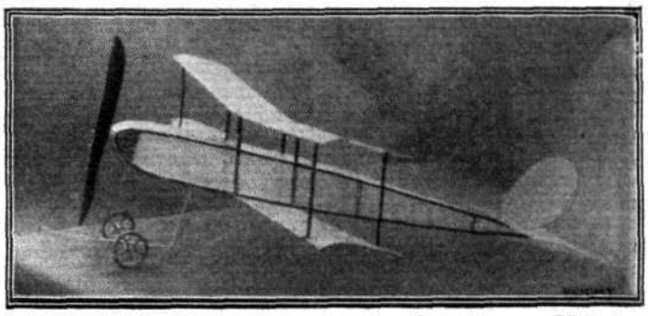
duration at least. Were it possible to obtain half a minute's flight with such a model, it would be well worth constructing, as many interesting experiments could be done with it, and since such a model is or could be a real prototype of the full-sized article, so far as its weight, distribution, &c., are concerned, such experiments would be of more value in some respects than those carried out with rubber-driven motors.

The span of the machine is 40 ins. ; the length 31 ins. ; chord 7·5 ins. ; number of longitudinals, three. Dimensions of tail, 10 ins. by 6.

The Broadstairs Model Construction Co.

"With reference to your interesting article on making models resemble their prototypes," write the above firm, "we beg to say that we have always been keen advocates in this direction and have discouraged as much as possible the flying stick and the A frame.

"We send you herewith some photographs of models recently supplied to clients, amongst them being Master Antony Asquith ; we shall always be pleased to send you from time to time photographs of models as supplied by us, to show that our clients are inclining towards your advice."



A model biplane tractor by the Broadstairs Model Construction Company.

HAS THE MODERN MODEL BEEN ANTICIPATED?

Mr. P. L. Senecal's Claim.

We have received from Mr. L. Senecal the following communication and details of a model aeroplane which his father, Mr. P. L. Senecal, claims to have made and flown as long ago as 1876, *i.e.* 38 years ago. Mr. Senecal was an old member of the Aeronautical Society, and undoubtedly carried out a great deal of experimental work that unfortunately has not been recorded as fully as it ought.

The claim as stated is an extraordinary one, even when one is fully aware of all that the Frenchman Penaud accomplished. With respect to the distance flown, *viz.* 700 yards, we think there must be some mistake, unless it was accomplished in a very high wind which simply blew the model along. We do not know of any modern twin screw *tractor* model, even hand launched, which has accomplished anything like this distance. We shall be pleased to receive any corrobative evidence of this claim, in respect to which we prefer for the moment not to express any opinion ; we shall be pleased to hear, however, what any of our readers have to say on the subject.

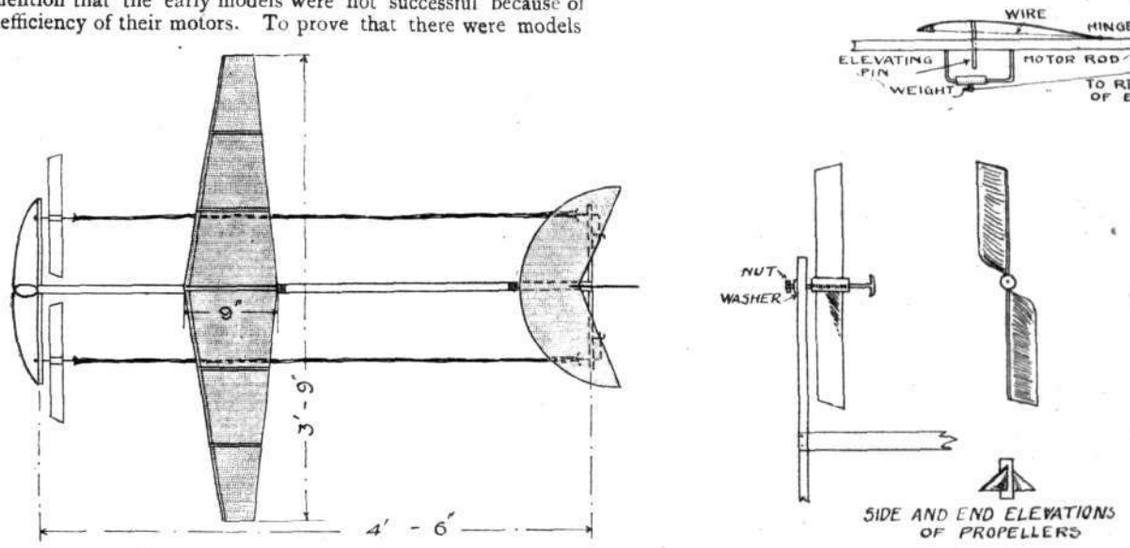
"Just a few remarks," writes Mr. L. Senecal, "in connection with your article in FLIGHT of June 19th, 'The Use of the Model in the Development of the Aeroplane.' The paragraph headed, 'The Aim of Early Experimenters,' is the one I refer to. In this you mention that the early models were not successful because of the inefficiency of their motors. To prove that there were models which could give a fair duration at that time, I am sending you the design and description of a model that was built by my father, Mr. P. L. Senecal, who was for many years a member of the Aeronautical Society of Great Britain. This model was built in 1876, and exhibited in company with a travelling helicopter model at the Workmen's Exhibition in Victoria Street, S.W., in 1879. It was catalogued under the heading, 'A Free Aerial Kite,' but in reality it would be now termed a twin tractor monoplane of the floating tail type. Previous to the Exhibition this model was repeatedly flown in Hyde Park (there were not so many trees there as now), and on one occasion flew across the Serpentine. This flight was commented on by a letter to the editor of the *Mirror of Science*, which I believe is now the *English Mechanic*, by someone who must have seen the flight.

"The model was afterwards fitted with a chassis and wheels made from the wheels of a clock, and rose from the ground and flew successfully. The longest distance that this model flew has been measured by my brother and I, and found, by stepping, to be about 700 yards* ; the launching and alighting points having been described to me by my father. The model terminated its flight in the branches of a tree, so that the model would have flown a greater distance. I am reconstructing the model myself, and will forward the results when I have tested the machine. The remains of the original model are still preserved, and it was from these I obtained the dimensions given below. The rest my father described to me. I hope that you will find space to publish particulars and drawings of this early successful model, which can be proved to have actually been seen in free flight. I shall be pleased to answer any enquiries concerning this communication to the best of my ability.

Design and Materials Used in Construction.

"*Motor rod*—bamboo, ½ inch in diameter ; 4 ft. 6 ins. in length. Cross bars at each end of white pine. Triangular section, knife edge forward, slotted in bamboo rod.

"*Main Plain*—at slight dihedral angle to motor rod. Span, 3 ft. 9 ins. ; chord, 9 ins. at central rib ; hinged at rear edge and elevated or lowered by pin fastened to central rib passing through motor rod at ⅓ of chord from front to rear edge of plane. The forward edge of the plane was made of bamboo triangular section and tapering towards the wing tips knife edge as leading edge. The rear edge and ribs were constructed of stiff watch spring, except the central rib, which was of bamboo. The whole plane was kept taut and stiff by concaving the plane from the central rib by bowing it by means of a piece of wire drawn tight under the rib. This gave the plane a rough camber, accentuated by the fact that the elevating pin, which was one-third of the chord from the edge of the plane, gave the maximum bow or camber one-third from the leading edge, high in the centre and washing out towards the plane tips. This was, I believe, the first cambered plane to fly or to be used in any way in the problem of flight.



Mr. Senecal's 1876 model.

* Penaud's best distance and duration appear to be 70 yards and 13 seconds.

"The *tail* dimensions are lost, but it was of a fish tail shape with a vertical rudder half above and half below the apex of the rear edge of the tail. The leading edge was of triangular sectioned bamboo, and was hinged to the motor rod, in connection with the automatic stabiliser. This was worked by a wire running on grooved wheels fixed to the motor rod and connected from the rear edge of the tail to the sliding weight under the plane and motor rod. The idea being that when the model pitched, the weight would slide forward and lift the tail from the back edge, depressing the rear part of the machine and throwing the nose, up and thus enabling the model to recover its longitudinal balance. For want of time the tests with respect to this particular device were never properly carried out. The vertical rudder was also hinged, and could be moved either to the right or left for directional control.

"The *tractor screws* were 13 ins. in diameter; right and left hand pitch. The blade tips were at an angle of 45° to the boss of the screws. The design is better understood from the drawings. The leading edge was straight from tip to tip. The rear edge was straight from the tip till near the boss of the screw, which was cylindrical, and then was shaped like a scoop. The method of mounting the screws to the cross-bar of the motor rod was by continuing the motor shaft through a hole drilled in the cross-bar. A little nut was soldered to prevent the shaft from coming out of the cross-bar, and washers were inserted between the nut and the cross-bar to minimise friction caused by the pull of the rubber motors. This method of screw mounting (to my idea) reduces the friction to a minimum."

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

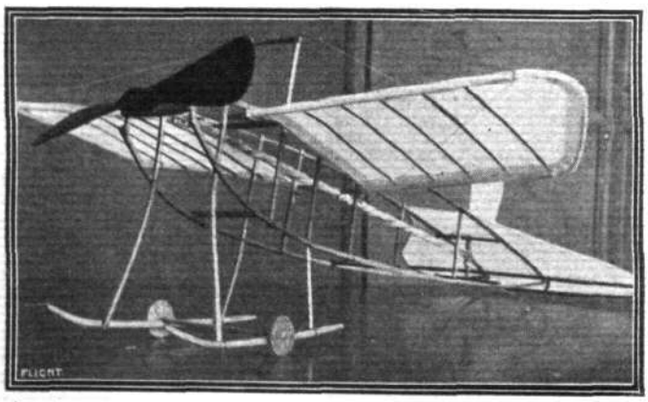
Single screw, hand-launched	Duration	J. E. Louch	95 secs.
Twin screw, do.	Distance	K. Lucas	590 yards.
	Duration	G. Hayden	137 secs.
Single screw, rise off ground	Distance	W. E. Evans	290 yards.
	Duration	J. E. Louch	68 secs.
Twin screw, do.	Distance	L. H. Slatter	365 yards.
	Duration	J. E. Louch	2 mins. 49 secs.
Single-tractor screw, hand-launched	Distance	C. C. Dutton	266 yards
	Duration	J. E. Louch	91 secs.
Do., off-ground	Distance	C. C. Dutton	190 yards.
	Duration	J. E. Louch	94 secs.
Single screw hydro., off-water	Duration	L. H. Slatter	35 secs.
Single-tractor, do., do.	Duration	C. C. Dutton	89 secs.
Twin screw, do., do.	Duration	L. H. Slatter	60 secs.
Engine driven off grass	Duration	D. Stanger	51 secs.

Official Trials.—The next official model trials will take place on the North-East London Ground at Hackney Marshes on August 29th. The route will be given in the notices of the N.E. London on the 22nd.

Hydro. Competitions.—The Royal Aero Club Competition and the Lady Shelley Competition take place to-morrow, Saturday, at the Welsh Harp, Hendon, commencing at 3 o'clock sharp.

Kite Flying Competitions.—Wimbledon Common, August 22nd, at 3.30 p.m.; entries close Saturday, August 15th. The Trollope Challenge Cup (presented by the late Lieut.-Col. F. C. Trollope). Holder, Mr. G. T. White. Prizes (presented by E. C. Trollope, Esq.): 1st, gold medal, and winner to hold cup for the year; 2nd, silver medal; 3rd, bronze medal. Additional rules governing this competition:—Competitors must use a team of two kites, with a minimum total measurement of 80 ft., computed by Rule 2. 2. Competitors must be at the judges' flag at 3 p.m. sharp, any not then present will be disqualified. 3. Total length of line or wire to be 400 yards, but not exceed 410 yards. 4. Each competitor is allowed two assistants, who must wear competitor's number. Any other person assisting will render the competitor liable to disqualification. 5. Points of attachment to be 100 yards apart, and length of attaching lines (if used) not to exceed 100 yards. 6. Marks will be awarded as follows: Angle, 1 mark for each degree attained by the lower kite, plus 3 extra for each degree above 50; stability, 125; strength of construction, 75; portability, 50. The Women's Aerial League Kite Competition, which was postponed from July 25th, will be held after the Trollope Competition. All those ladies who entered are asked to be present at 4 p.m. sharp.

27, Victory Road, Wimbledon. W. H. AKEHURST, Gen. Hon. Sec.



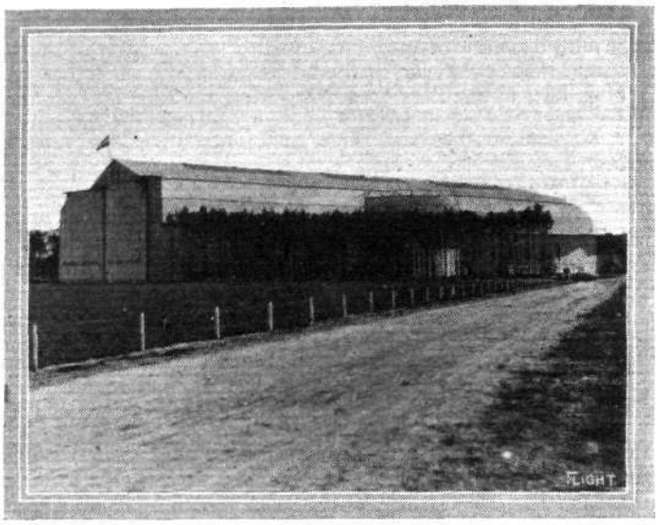
An interesting model made some time ago by Mr. Wm. Thompson, of Newcastle-on-Tyne. Built of $\frac{3}{16}$ in. square American poplar wood, the model is 28 ins. long by 26 ins. span. It is highly varnished and weighs 5 ozs. The tractor is of ash, carved from the solid.

UNAFFILIATED MODEL CLUBS DIARY.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Finsbury Park and District (66, ELFORT ROAD, HIGHBURY, N.).

AUG. 8TH, flying at Finsbury Park, 3.30 p.m. till dusk.



The large airship shed at Potsdam; note the gasometer on the right. The large lettering on the doors is the German equivalent for "Smoking Prohibited." Photo. by Sir John Shelley.

PUBLICATIONS RECEIVED.

The Wellcome Chemical Research Laboratories, and Their Exhibits at the Anglo-American Exposition, 1914. London: Burroughs Wellcome and Co., King Street, Snow Hill, E.C.

The Wellcome Physiological Research Laboratories, and Their Exhibits at the Anglo-American Exposition, 1914. London: Burroughs Wellcome and Co., Brockwell Hall, Herne Hill.

Rendiconti delle Esperienze e degli Studi. Part 2, Vol. III. Rome: Stabilimento di Esperienze e Costruzioni Aeronautiche del Genio, Viale Giulio Cesare No. 2.

Catalogue.

Exhibits of Burroughs Wellcome and Co. at the Anglo-American Exposition, London, 1914. Burroughs Wellcome and Co., London.

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